Chemical Week

August 23, 1952

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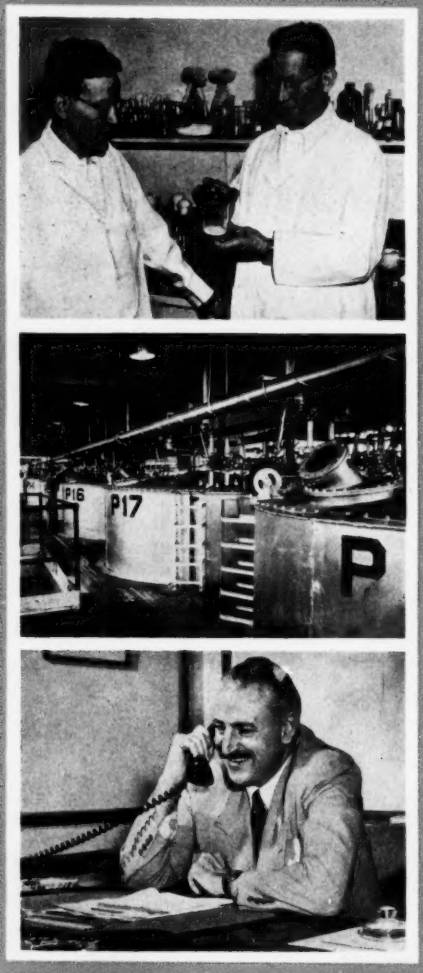

Upjohn researchers push fermentation process as cortisone competition quickens . . p. 33

Fewer "iron horses," more diesels; here's what trend means to chemical formulators . . . p. 41

CW Camera: No oil, more sales; that's what's behind new petroleum sulfonate unit . . . . p. 47

Look for sales scramble as phenolic resins makers vie for shell molding market . . . . . p. 56

ICI's MacLean: his job—U. S. sales; his burden—tariffs; his prospects—dim . . . . . p. 63

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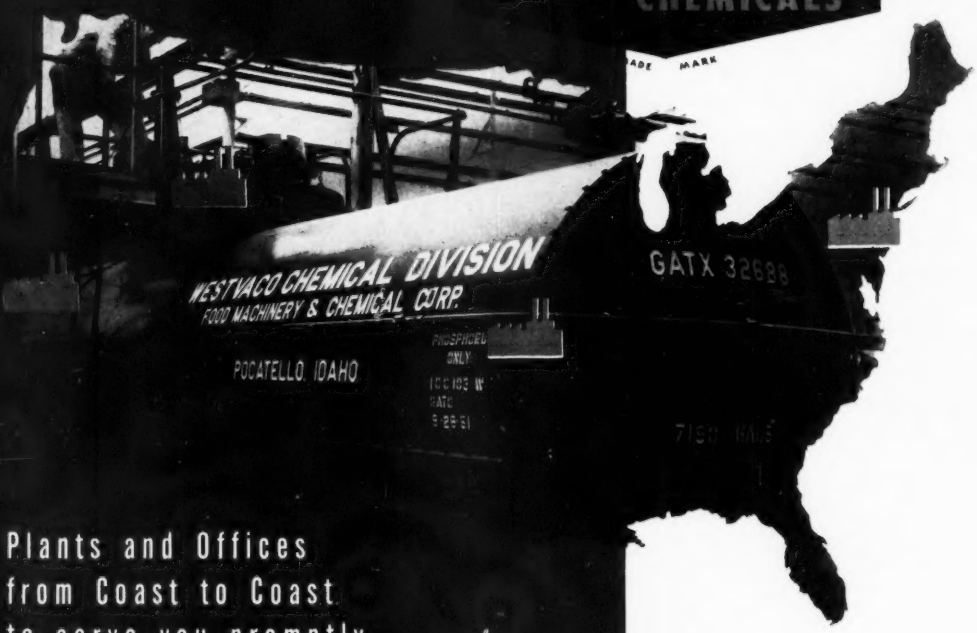

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Chemical Week

Volume 71 Number 8
August 23, 1952

OPINION	2
NEWSLETTER	9
BUSINESS & INDUSTRY	13
RESEARCH	33
SPECIALTIES	41
PRODUCTION	47
MARKETS	53
DISTRIBUTION	60
BOOKLETS	68

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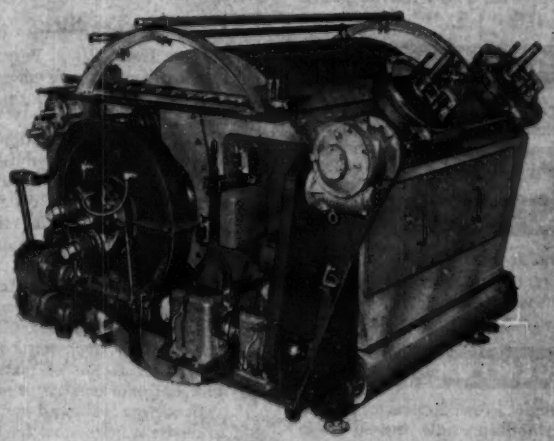

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OPINION . . . . . .

Is 'Chemical' Redundant?

TO THE EDITOR: I just read the headings on the August 2 cover. One of our recently acquired staff members has had considerable experience in connection with catalyst development so I asked him to tell me the difference between a "catalyst" and a "chemical catalyst." He wasn't smart enough. Therefore I am referring the question to you.

CARL S. MINER
Director
The Miner Laboratories
9 S. Clinton St.
Chicago 6, Ill.

We justify our phrase, Reader Miner, by the argument that a physical catalyst—e.g., platinum black—on which catalysis is simply a surface phenomenon, can be differentiated from a chemical catalyst—e.g., benzoyl peroxide—which, by a free radical mechanism or otherwise, actually participates in the reaction.

We would be less than absolutely honest, however, if we failed to point out that the extra word "chemical" also enabled us to observe our standard three-line format!—ED.

Offer to Skeptics

TO THE EDITOR: . . . Very interesting article regarding my chlorine-caustic cell development in the July 19 issue . . .

However, since I did not see the article before it was published, kindly permit me to reply to the skeptical, through your readers' column, and to express my thanks for the interest which provoked their comments.

In regards to "going wrong" on plant operation—it is not my intention to operate the strictly "chemical" phase of the cells. That will be done by experienced electrochemists while I look after other factors of plant operation that are quite familiar to me.

Because a real effort has been made to devise a better tool for the electrochemist, it is difficult to understand why anyone, no matter how well versed in "chemistry," would so prematurely derogate the merits of this improved and compact chlorine-caustic equipment, which is primarily "mechanical," on so little real knowledge of that equipment.

No doubt, you have seen chemical equipment "spread all over a forty-acre field" because too much emphasis was placed on the "chemistry" and too little on the "mechanics" and "economics." This "spread" was one of the motivating forces in my designing for greater space economy and lower capital investment.

After all, those most concerned are the cost-minded executives and boards of directors together with the capital-supplying stockholders.

They are interested, not in chemistry for the sake of chemistry alone, but in the value of, and the return that can be obtained from, chemical investments. It is at this basic issue that the design is aimed.

To correct a comparison—the 75% reduction of required cell room area is the saving in space over the *most modern cells* of today, even with their 50% space saving over older installations.

The adverse comment on "stacking" and servicing is uninformedly made, since servicing the tiered cells is one of the simplest and safest operations—in fact, it is one of the salient design features.

In closing, let me refer to the July 1952 issue of *Chemical Engineering* . . . and to the pinpointing comments of two outstanding men, namely Mr. Robert C. McMullen and Mr. C. C. Brumbaugh, regarding the needs of the chlor-alkali industry, and then point to the many features of the White electrolytic cell that fulfill their expressed requirements . . .

A. S. WHITE
7344 S. Green St.
Chicago 21, Ill.

P. S. There is a standing offer to the skeptics to back up their skepticism with sufficient money to build a plant —just to prove me wrong.—A. S. W.

Downright Dangerous

TO THE EDITOR: I realize that some of the pictures in your photo story on the synthesis of allethrin (July 5) were posed and thus the operators and chemists were concerned with their appearance . . .

But was it realistic to show all but two of them with their eyes carefully uncovered? I shuddered particularly to note the plant supervisor taking a sample in such a downright dangerous manner.

Some students or inexperienced chemists may read your magazine . . . might be convinced that such is safe industrial practice . . .

JAMES T. MITCHELL
Concord, Cal.

A good point, Reader Mitchell. When we toured the allethrin project, CW shot several dozen informal on-the-job pictures (from which we selected eight for publication).
The picture you refer to was, how-

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ever, posed and, for photographic reasons, without the customary goggles. —ED.

Shorter, Quicker

TO THE EDITOR: Re CW July 19 "I. C. I. Shrinks Dollar Deficit" penultimate paragraph . . . You say "The dyestuffs . . . division . . . is *momentarily* expected to be on stream . . ."

Why only momentarily?

Can I plead for the correct usage here of momently, which means "from moment to moment". Momentarily means instantaneously or for a moment . . . See "Modern English Usage" by Fowler . . .

Besides momently is shorter, quicker, less of a tongue-twister . . .

M. VALOIS
Polythene Division
Canadian Industries Ltd.
Montreal, Canada

You may, of course, plead for momently, Reader Valois, and in a pure sense you may be correct (although Webster and Funk & Wagnall can't agree on an iron-clad definition for momentarily.) CW, not necessarily impure, does admit to indulging in common usages which may not always be dictionary-perfect.—ED.

'Sold in the Teeth'

TO THE EDITOR: Your comments on our oxygen-nitrogen plants . . . June 28 reached us just as we were despatching our first plant to the American continent, sold in the teeth of U. S. competition.

We, in the U.K. have also made some progress on these oxygen plants and we believe that our models, incorporating some interesting variations on the American types, may prove popular.

A special feature of the Petrocarbon oxygen plant, which may be attractive to American customers, is that all but the very smallest types can be fitted at low cost with subsidiary equipment for separating other constituents of air. These plants are finding favour both with small and relatively large consumers of the gases in Europe.

We hope shortly to publish a detailed description of our new units in the U. S. technical press.

D. BROOK-HART
Petrocarbon Ltd.
170, Piccadilly
London W. 1., England

Likes it Liquid

TO THE EDITOR: With regard to the article "Pouring It On" (*July 19*) we are highly in favor of the use of the concentrated chemical fertilizers dissolved in water and applied to soil for commercial and amateur use.

Emphasis must be placed on the concentration of the material, especially where amateur gardeners are involved. The liquid application of concentrated fertilizers gives a more uniform distribution of the material and a supply of fertilizer in immediately available form.

KENNETH POST
Professor
Dept. of Floriculture & Ornamental Horticulture
N. Y. State College of Agriculture
Agricultural Experiment Station
Cornell University,
Ithaca, N. Y.

Safety Solvents

TO THE EDITOR: . . . I have read the letter in your July 12 issue . . . commenting on your news article "Degreasing with Safety" (June 28) . . . and mentioning another solvent blend which shows no flash point until 10 percent of it has been distilled off . . .

The whole point of the original article was missed, in that the stability of the blend is the important factor. It is simple to bring about solvent-blend as having no initial flash. What is more difficult is to evolve a blend having little or no variation of flash point from initial to dry points.

There is a very real danger in products having no initial flash point—since carelessness . . . is inevitable . . .

JOHN B. MOORE
General Sales Manager
Aviation-Industrial Chemical Div.
Fine Organics, Inc.
New York, N. Y.

'One of Best'

TO THE EDITOR: . . . PHOSPHORUS REPORT [Aug. 2] ONE OF BEST I HAVE EVER READ.

EDWIN COX
Vice President
Virginia-Carolina Chemical Corp.
Richmond, Va.

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: The Editor, Chemical Week, 330 W. 42nd St., New York 36, N. Y.

THE COVER PICTURES

MIDDLE—Paul J. Wolfe; BOTTOM—Chris Grube, McGraw-Hill.

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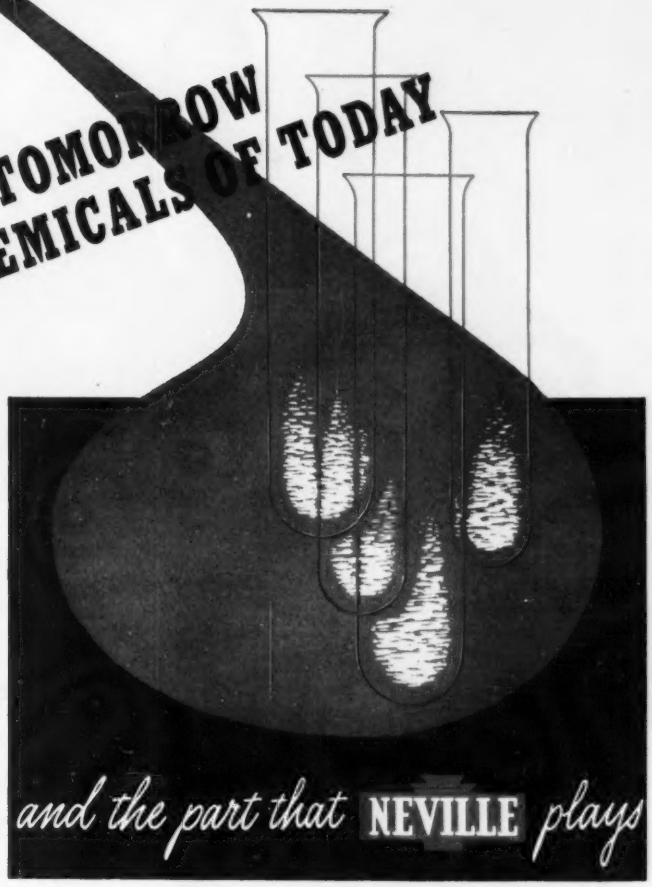

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EXTERIOR masonry and concrete surfaces—like these stucco apartment buildings—have always been a major problem to paint makers and users. Alkalies present in these surfaces attack paint—cause premature failure. Sun, weather and heat attack the film. Dirt, soot, salt spray add to the problem.

Then Goodyear—largest maker of synthetic rubber resins—introduced PLIOLITE S-5, especially developed as a base for paints for masonry and stucco. Buildings painted with coatings based on PLIOLITE S-5 still are attractive after five years! This seaside apartment building shown here looks fresh painted after two years. And hundreds of installations all over the country are proving that PLIOLITE S-5 makes an alkali-resistant, self-cleaning, long-lasting paint that ends these problems!

While Goodyear makes no finished paints, PLIOLITE S-5 is now available in stucco and masonry paints, concrete floor enamels, plaster sealers, chemical-resistant coatings and specialty paints, through leading manufacturers. To all of them, PLIOLITE S-5 brings the *quality* you expect of Goodyear products—made to the world's highest standard of quality. For further details, write:

Goodyear, Chemical Division, Dept.
Akron 16, Ohio

After two years, this seaside apartment building still looks fresh painted, thanks to PLIOLITE S-5

Photo courtesy SEC Manufacturing Company, Miami, Florida.

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Chemical Week

BUSINESS MAGAZINE OF THE CHEMICAL PROCESS INDUSTRIES

NEWSLETTER

Sulfonation with stabilized sulfur trioxide (sulfuric acid anhydride) is the cornerstone process to be used in a detergent plant which Ninol Laboratories is building on Chicago's south side. The new unit will produce 2 to 3 million pounds a year of hydrocarbon sulfonates—over twice the firm's current capacity.

Not only is the new process cheaper, says Ninol, but it can make products unobtainable by other methods. On the agenda: lube oil additives, fine organics, various special surface-active agents.

Ninol started using the sulfur trioxide process in its present plant last January, liked it well enough to go ahead with expansion.

Last week another Chicago-area plant started producing 55 tons a day of 99.9%-pure sulfur from the hydrogen sulfide in by-product fuel gases. Standard Oil of Indiana's Whiting (Ind.) plant came onstream.

Standard will convert most of it to acid for alkylation and other petroleum refining operations.

Now on sale after test-market campaigns in St. Louis, Chicago and several southern cities is Simoniz Co.'s Bodysheen, a combination cleaner-polisher for automobiles. Simoniz says it's not a silicone product.

A three-year legal battle came to an end last week when the Dutch Paint Co. (San Francisco) won the right—contested by National Lead Co.—to use the word "Dutch" in connection with its products. The U. S. District Court awarded the partnership a declaratory judgment.

Partners Wolfe and Dannenfelser, who also do business under the name of Manning-Mitchell Paint Co., have also filed a treble-damage antitrust suit against National Lead and Du Pont for $1,695,000, charging that they were cut off from adequate titanium pigment. Pre-trial hearings started this week.

Lack of steel rather than of orders forced Linde Air Products to cut the work week at its N. Tonawanda (N. Y.) plant from 48 to 40 hours.

The plant makes oxyacetylene process equipment.

A soon-scheduled public stock offering will throw the spotlight on Texas City Chemicals, Inc., which broke ground last March for a $4½ million dicalcium phosphate plant.

Using Florida phosphate rock, sulfur, and spent sulfuric acid from Carbide & Carbon's nearby plant, the firm will make the calcium-salt, recover uranium from the crude phosphoric acid.

Pretty clothes or food? Expansion of rayon production in the Soviet Zone of Germany is considered so urgent by government planners that they plan to cut sulfuric acid allotments to fertilizer makers by 50%.

Celanese Corp. has shelved the program on its Fiber 32, a caprolactam-based nylon (nylon 6, or Perlon L).

The decree that Du Pont and ICI relinquish their control of Canadian Industries Ltd. (*CW*, Aug. 9) spawned views from both New York (p. 23 this issue) and Canada this week. This is what CIL told its Canadian stockholders:

The Du Pont-ICI holdings are valued at about $225 million (84%), public holdings at just under $55 million.

The U.S. Court sets out a choice of four plans: (1) sale of Du Pont-ICI holdings to parties unassociated with the two companies (2) sale of stock owned by either Du Pont or ICI to such unassociated parties (3) sale of stock owned by Du Pont or ICI to the other (4) segregation or physical division of CIL plants and properties between Du Pont and ICI "to create in Canada a situation in harmony with U.S. law."

And this CIL has been assured: If segregation is selected as the plan, Du Pont and ICI will consult with CIL as to its effects on other stockholders. Incidentally, the Canadian company has 8,500 employees, 22 plants, $45,500,000 tagged for expansion projects now under construction.

Among controversial topics, fluoridation of drinking water ranks well up the scale—there are plenty of rabid "let's do" and just about as many "let's don't." But this week San Francisco will join the go ahead ranks, become one of the largest cities in the country to launch a fluoridation program.

The project was OK'd by voters last November but has been bogged down by legal shenanigans for the past few months. This Saturday, however, fluoridation of water at plants which serve about a third of the city's area (and reach half the city's population) will begin. Of the first year $40,000 appropriation some 30% will be spent for chemicals and equipment.

You can expect to see a good deal of controversy boiling around the chemicals in foods issue early next year. The Delaney Committee hearings have provided popular science writers with a raft of "official" documentary material and the bet is that you'll be reading a spate of articles pointing up the case for more federal control "in the interest of consumers."

And, even though many maintain that the FDA has long had more power and authority than it has used, that agency is solidly behind the drive for additional, new legislation. There's no doubt that several bills will be introduced when the new congress meets in January.

It stacks up like this: With press publicity, the FDA and congressional committees plugging for more controls, a new law is a certainty unless the chemical industry musters a fat roster of facts to out-impress Congress.

Out of Washington comes another, and this time, technological development. Oxygen-nitrogen plants are being installed on the Navy's aircraft carriers to make them independent of shore bases (or refueling ships) for oxygen needed for high altitude jet planes. Nitrogen is used to purge the carriers' gasoline lines.

Two types of oxygen producers are being used. One, developed by Linde will be installed on all Midway class carriers. The other, made by Air Products, Inc., will go on the Forrestal class .

Here's a new twist in the chlorophyll business. Ad men are chuckling over the "turn-the-clouds-inside-out" sales idea one maker of non-chlorophyllated toothpaste has been mulling over: To sales slogan his starkly white dentifrice as "the only toothpaste guaranteed not to turn green in the tube."

. . . The Editors

Aid or Trade?
A CRISIS AHEAD

A crisis in the foreign trade relations of the United States is in the offing. It is a crisis caused by:

1. Efforts of producers in friendly nations to earn more dollars by increasing exports to the United States, and
2. Efforts of industries in the United States which would be hurt by competition from these imports to keep them out.

This crisis is a threat to the effectiveness of American leadership in the crucial effort to build the nations of the free world into a strong and unified group. It is the purpose of this editorial to advocate a constructive approach to the difficult situation that is developing.

Background of the Crisis

Most countries in the free world—with American aid—have managed to push their outputs well above prewar levels. As they have done so, they have been urged by our highest government officials to increase their exports to us. Sales in our market enable these countries to earn dollars which they use in turn to buy the products of America's farms and factories. Thus, as they become self-supporting, the need of American aid is reduced.

But as these efforts to export more to the United States have promised increasing success, competitive American producers have become increasingly alarmed about what that success might do to them. Consequently, they are seeking more protection—by appeals to the U. S. Tariff Commission to recommend higher import duties and by appeals to Congress for new laws to discourage imports.

Our Friends Protest

A year ago Congress answered one of these appeals by imposing a quota on imports of dairy products. Now, among many other legislative proposals being strenuously pressed is a move to extend the scope of "Buy American" legislation. A year ago the U. S. Tariff Commission had only four petitions for increased import duties on its docket. Since then fourteen more petitions have been filed and others are definitely on the way.

Faced by these mounting efforts to block the sale of their products in the American market, no less than eleven friendly nations, including Great Britain, France, Italy, Canada, the Netherlands, Switzerland and Denmark, have filed protests with our State Department. Through many of the protests runs one refrain. Although stated in diplomatic language, it might be correctly paraphrased to say: "*In*

sending us aid you have made it very clear that you want us to get on a self-supporting basis at the earliest possible moment. But, when we begin to make headway in that direction by trying to sell you more of the things we are equipped to produce, you start closing your market to us." The threat of European resentment against the United States being stirred up by this argument is obviously great.

At the same time there exist grounds for special resentment in the United States against certain prospective imports of European manufactured goods—those of machine tools, for example. In part these will be produced with machinery that has been sent to Europe as part of our economic aid program. With absolutely no diplomatic language involved, the argument, which will be extended much farther than the facts would justify, will run: *"We gave those people the equipment that they now use to cut our throats!"* This line of argument will find response among workers as well as employers in industries faced by more competition from imports. Labor, too, is keen for protection against more foreign competition.

Aid or Trade?

As between continuing direct economic aid to Europe or accepting the imports that would make those countries self-supporting, some would prefer to continue the aid program. They argue that the tax machinery of the federal government can spread the burden of aid broadly, while we have no comparable machinery that can cushion the shock to individual industries, firms and communities that may result from stepped-up imports of competitive products.

As we see it, this position is untenable. It would make rubbish of our Atlantic Charter promise ". . . to further the enjoyment by all States, great or small, victor or vanquished, of access, on equal terms, to the trade and to the raw materials of the world which are needed for their economic prosperity." It would be an admission that, for all our profession of faith in competition and our opposition to European cartels, we really don't believe in competition.

U. S. Self-Interest

The people of this country have invested billions of dollars and seven years of hard work in the attempt to put our allies on a self-supporting basis. If we keep their goods out by raising trade barriers, we are directly defeating our own purposes.

Also, in moving to protect some groups of American producers we should be hurting others. For many American producers the export market, which this year will take about $14 billion of civilian goods, spells the difference between operating at capacity and closing down 25% of their facilities. When we discourage imports we cut off dollar earnings by other nations which are spent here to keep some of our factories and farms going.

At the same time, it must be recognized that certain American industries and their capacity to maintain employment will be hurt by increased imports. Hence it becomes critically important for the United States to formulate a national program designed to help these industries and communities take up the shock.

There is no neat and simple prescription by which this can be done, but several possibilities have been suggested. One on which there is general agreement is that tariff reductions should be gradual. To cushion their impact, the government might well give preference on defense orders to industries and areas adversely affected by an increased volume of imports. Direct assistance to workers and companies in shifting to different lines of business may be worth consideration.

These are by no means all the possibilities. They may not even be the best. But they do serve to suggest the necessity for flexibility and imagination in dealing with the growing crisis in trade relations. *Our ingenuity in developing new ideas to meet this crisis may well be a decisive factor in our effort to weld the free nations into a strong and durable alliance.*

McGraw-Hill Publishing Company, Inc.

BUSINESS & INDUSTRY . . . . .

Wool, Sweat, and Tears

Just about now, clothing retailers are ready to wipe off their summertime sweat, in order to get down to selling their fall and winter merchandise. And this year, retailers are well supplied with promotional material having a strong anti-synthetic fiber bias.

Much of the material was collected, if not signed, by the Wool Bureau, a promotional group. The thread of the promotion—"Fiber W" is the only true "miracle" fiber. Despite the obvious slam at synthetics, Wool Bureau president Gene Ackerman still insists that wool men aren't in a battle of the fibers. And whether one agrees or disagrees, there is no questioning the comprehensiveness of the bureau's promotion program.

So far, it has included these different publicity moves:

- Distributing promotional material and brochures to 7,500 men's wear retailers.
- Sending publicity and promotion to 1,650 newspapers and 175 radio stations.
- Circularizing teachers in schools and colleges.
- Organizing an educational program for retail clothing salesmen, in cooperation with the U.S. Office of Education.

In looking at the whole program from the point of view of the synthetics, perhaps the most disturbing fact is that the source of the pro-wool bias is not always apparent. Different projects often have several sponsors.

Men's wear manufacturing and retailing groups, for instance, decided last year to go along with the Wool Bureau on a campaign to increase sale of men's clothes. Much of the material resulting was distributed in the names of groups which shouldn't have had an axe to grind.

Surprise was expressed by an official of the U.S. Office of Education when asked why the government would lend its name to a program with an anti-synthetics slant. He said he had no reason to believe the material was anything but fair.

Why was the material used? The Wool Bureau had been generous in taking time and effort to supply help; it offered to print the lesson materials; it was a single source from which material could easily be obtained.

FABIAN BACHRACH

ACKERMAN: A battle of miracles.

Implicit in this last statement was the fact that information on the different synthetics must be gained from individual manufacturers. There is no central clearing agency comparable to the Wool Bureau.

Who's Who: The Wool Bureau itself was established by joint action. It got its start in February, 1949, in the merger of the American Wool Council, the International Wool Secretariat and interests representing the wool boards of Australia, South Africa and New Zealand.

Douglas Boyd, an Australian who became the bureau's board chairman, described the action this way: "No single act in recent times has shown so vividly the great spirit of understanding which exists between all those with the welfare of wool at heart."

The support of the bureau seems to show whose welfare is most dear: For the 1952 promotional campaign, American wool growers put up about $40,000; British Commonwealth interests, $750,000.

Green Hills Go-Ahead

Union Carbide and Carbon this week is going ahead with its plans, apparently free of legal obstacles, to construct suburban executive offices.

The Westchester county town of Mount Pleasant has approved a change in its zoning regulations as did nearby Greenburgh a few weeks ago. Carbide purchased the 286-acre James Butler estate contingent on these zoning changes.

The approval came in the face of determined and vocal opposition from some nearby residents. Their main fear was over the wording of the zoning change, which would allow Carbide to build apartments and homes on its property, in addition to office and laboratory space. In the words of one objector, any advantage to community tax rates would be overbalanced by "the erection of a multitude of low-cost homes or apartments which cannot even come close to paying their way in the school district."

Carbide's attorney, however, said the contested clause was inserted so the "corporation's hands would not be tied" in the future. Carbide's plans do not presently call for any residential construction, but the company may sometime construct a few homes for executives on the property.

But whatever the legal status of the project, the company emphasizes that it will be several years before it can move its non-sales personnel away from the sidewalks of New York.

Four-Fifths Finished

A progress report on the now 8-year-old New York water fluoridation test, given last week by New York's state health commissioner, indicates fluoridation reduces tooth decay, is harmless.

The test compares the incidence of tooth decay among school children in the Hudson River communities of Kingston and Newburgh. Said Commissioner Herman Hilleboe: Tooth decay in Newburgh (where water has been fluoridated since 1944) is 47% less than in Kingston, which served as the control.

An even greater drop has been noted among children who have been drinking the treated water from birth —a two-thirds decrease.

So far, examination reveals "absolutely no harmful effects from drinking fluoridated water," Hilleboe reported. However, though the results so far have been quite striking, the test still has two years to run before the results can finally be tallied.

But while sweetness and light char-

acterized the reports from up river, the down-stream community of Peekskill was embroiled in a suit to bar fluoridation. Elderly attorney Charles E. Winslow has asked that the city be enjoined on grounds that fluoridation would be harmful to older people. Quoth he: If a city puts fluoride in the drinking water, it's practicing medicine without a license.

LABOR

'No Hard Feelings': Midsummer strikes are keeping tempers hot in various segments of the chemical industry, but a strike doesn't always produce animosity. In Buffalo, N. Y., Electro Refractories & Abrasives picked up the tab for the company's annual employee picnic, even though the 125 workers were on strike. "There are no hard feelings, no reason why we shouldn't have a good time together," remarked Vice-President Carl F. Leitten.

• At Olive Hill, Ky., production has been halted at two plants of General Refractories by a month-long strike of some 770 members of the AFL United Brick & Clay Workers. The workers are striking in behalf of tipplemen and weighmen, who sometimes work as little as five hours a day.

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Peace, It's Wonderful: Industrial peace reigns at more than a score of chemical plants covered by new labor contracts signed last week. The list includes:

• Koppers, Nashua, N. H.—general pay hike of 7¢ an hour and more liberal holiday and vacation plans for members of District 50, UMW.

• Merck, Rahway, N. J.—19-day strike ended with agreement for time-and-one-half pay for holidays and greater insurance coverage for 1,800 production workers, subject to WSB approval.

• National Carbide, Bells Lane, Ky.—pay rise of from 8¢ to 10¢ an hour, retroactive to last Nov. 1, for 394 members of AFL Firemen & Oilers union.

• Dewey-Almy Chemical, Lockport, N. Y.—pay boosts of from 15¢ to 59¢ an hour okayed by WSB for 230 members of United Auto Workers (CIO), retroactive to last Sept. 1. WSB had turned down this pact twice before.

• Du Pont, Columbia, Tenn.—WSB assented to wage, hours and vacation plans for new plant with expected force of 175 employees.

• Federal Chemical, Nashville — Time-and-one-half pay for work done on Saturdays affirmed by WSB for 144 production workers.

• Goodrich Chemical, Louisville, Ky.—631 employees to receive wage increase and fringe benefits worth about 4¢ an hour, approved by WSB.

• Jefferson Chemical, Port Neches, Texas—pay boost of 15¢ an hour and shift differentials of 6¢ and 12¢ accepted by 65 AFL craftsunion members.

• Kaiser Aluminum & Chemical at five plants (Spokane and Tacoma, Wash.; Newark, Ohio; Halethorpe, Md.)—contract running to 1954 provides for 16¢ average wage increase, retroactive to last Jan. 1, plus 4¢ increase for gain in productivity for 5,000 employees.

• American Cyanamid, Willow Island, W. Va.—wage increases ranging from 12¢ to 18¢ an hour, retroactive to last Nov. 19, subject to WSB approval. Employees are members of CIO Gas, Coke & Chemical Workers.

• Ansco, Binghamton, N. Y.—AFL Chemical Workers and four other AFL unions agreed to forego wage increases in new contract because of decline in company's net profits for first half of 1952

EXPANSION

Polyester resin demand is great enough, reasons U.S. Rubber's Naugatuck chemical division, to warrant doubling capacity of its Naugatuck, Conn., plant. Largest demand increase has come in use as a structural material used in combination with glass fiber.

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Fatty acids derivative production at Arnold, Hoffman's Harkness & Cowing division plant (Cincinnati) will be increased. The move reflects the ICI subsidiary's decision to produce derivatives of the company's basic products.

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Phosphoric acid: Virginia-Carolina expects to begin work within 6 weeks on its wet process phosphoric plant to be constructed at Nichols, Fla. Plans for the plant were first revealed late last year.

• The plant will include uranium-recovery facilities (*CW, Dec. 1, '51*).

•

Metals, Minerals: In the news this week were several expansions and contracts in the mining field:

• **Fluorspar.** The Defense Materials Procurement Agency will advance the St. Lawrence Corp. of Newfoundland, Ltd., $1.25 million for construction of fluorspar concentration facilities on the Burin Peninsula (Newf.) and at Wilmington, Del. DMPA expects to realize an additional 50,000 tons of acid grade fluorspar for the U.S. yearly from this investment.

• **Manganese.** DMPA also will advance $1.5 million toward a $2 million plant to be constructed by Chemicals Corp., Minneapolis, at Riverton, Minn., for recovery of the metal from low-grade Cuyuna Range ores. Capacity of the semi-commercial scale plant will be 456,000 long ton units of 60% or better manganese concentrate per year. The plant will use the ammonium carbamate (Dean) process.

• **Cobalt.** Since Canada has lifted its ban on exports of cobalt, the U.S. (via DMPA) has signed contract to buy 5 million pounds of cobalt from the Silver Miller Mines, Ltd.

• **Tin.** A small tin smelter may be constructed near Seattle to handle tin and tungsten concentrate from U.S. Tin Corp.'s workings at Lost River, near Nome, Alaska.

MEETINGS

Natl. Agricultural Chemicals Assn., annual meeting, Essex and Sussex Hotel, Spring Lake, N.J., Sept. 3-5.

Internatl. Leipzig Fair, Fair Palace, Leipzig, Germany, Sept. 7-17.

Amer. Standards Assn., Museum of Science and Industry, Chicago, Sept. 8-10.

Instrument Soc. of Amer., conference and exhibit, Cleveland, Sept. 8-12.

National Chemical Exposition, Coliseum, Chicago, Sept. 9-13.

Natl. Petroleum Assn., annual meeting, Traymore Hotel, Atlantic City, Sept. 10-12.

Tech. Assn. Pulp & Paper Ind., testing conference, Marshall Hall, Syracuse, N.Y., Sept. 10-12.

Packaging Mach. Mfrs. Inst., annual meeting, Homestead Hotel, Hot Springs, Va., Sept. 11-14.

Warpath Wampum

Meeting in Chicago the latter part of this week for their sixth constitutional convention, the United Gas, Coke & Chemical Workers of America (CIO) are expected to discuss a proposal to raise money for a robust strike fund.

"Think what this union could do," the Gas-Coke newspaper editorialized recently, "if it had a $12 million defense fund to back up its locals when a strike threatens."

Martin Wagner, the veteran unionist from East St. Louis, appeared likely to be re-elected president of the union for his sixth two-year term. He was nominated by 128 locals and district councils, while the other 54 nominations for the top office were divided among four candidates.

Secretary-Treasurer Cecil Martin's report will show that Gas-Coke's paid-up membership now stands at more than 70,000.

COMPANIES . . .

Celanese's north-of-the-border subsidiary, Canadian Chemical & Cellulose has scheduled a meeting of shareholders this week to vote on doubling the number of directors. The move naturally follows the recent public sale of stock in the company, formerly a wholly-owned subsidiary. Present directors are all Celanese officers; if the doubling is approved, five of the eight will have Celanese affiliation.

• Incidentally, the forest management license of Canadian C&C's Celgar Development subsidiary, British Columbia, is being disputed. The William T. Joyce Co., Ltd., has appealed to the B.C. cabinet to set the license aside. Joyce holds land in the forest management area, but has never operated there.

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Ketchikan Pulp, joint subsidiary of American Viscose and Puget Sound Pulp & Timber, has received $36 million to pay for part of its now a-building (*CW, May 10*) pulp plant at Ward Cove, near Ketchikan, Alaska. The loan from institutional investors is at 4.25%, due in 20 years. Plant will produce better than 100,000 tons of high alpha pulp, much of which will be sold to Avisco.

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Bettinger Corp., Waltham, Mass., has acquired, via stock transfer, Toledo Porcelain Enamel Products, which will become a division of Bettinger. The new facilities at Toledo will service Bettinger's Midwest markets for metal coated and ceramic coated products.

President (and controlling owner) of Bettinger is Robert A. Weaver, Jr.; Weaver, Sr., is Ferro Corp.'s chairman of the board.

•

American Potash & Chemical which for many years has sold bromine to Eston Chemicals, will now be selling its bromine to its Eston Chemicals Division. Am Potash acquired the company through an exchange of 22,837 shares of its class B stock for all Eston's stock.

• The acquisition marks a definite diversification for Am Potash, since it now will become a manufacturer and distributor of such items as insecticides, fumigants, refrigerants and aerosols.

•

Columbian Carbon will repay short term loans and get working capital from a $20 million revolving credit good until June 30, 1954. Interest on money until that date will vary between 3 and 3.25%, when the company may convert the outstanding loan into a 3.5% term note due in 1963.

HARRY RUBENSTEIN

TYLER: Likes pro-labor solons.

Pitch on Politics

Chemical workers are being exhorted to help elect Congressmen who will try to enact higher corporate taxes, steeper tax rates on personal incomes, price control and higher minimum wages.

This was the theme of a speech given to some 90 representatives from chemical plants in New England and North Atlantic states who were attending a labor institute of the AFL Chemical Workers Union last week on the Rutgers University campus in New Brunswick, N. J. The union has held similar institutes at other sites this year.

After the delegates spent a week studying labor problems such as "Economics of Wage Negotiation" and "How to Handle NLRB Cases," they heard from Gus Tyler, AFL member of Labor's League for Political Education.

Tyler promised to send reports on Congressmen's voting records to the local unions, and urged the unionists to campaign for candidates who would be friendly to labor. He said it was particularly important to prevent the appointment of an "anti-labor" Wage Stabilization Board.

Union Shop Fueds

Two strikes being waged by the International Chemical Workers Union (AFL) have been going on so long they're beginning to look like fueds that might carry over from generation to generation.

Both disputes involve demands for union-shop clauses. The 350-man strike against Johns-Manville at Lompoc, Calif., has lasted five months, and the 420-man mutiny against Swift & Co.'s fertilizer plant at Bartow, Fla., now is nearly four months old.

Previously, the union has insisted that the main issue at Lompoc was health and safety of the workers, but more recently the union offered to drop its opposition to the allegedly unhealthful incentive system if the company would agree to a modified union shop, such as was included in the steel strike settlement.

No Compulsion: But Johns-Manville repeatedly refuses to consider a contract involving compulsory union membership. Instead, J-M is offering to explain to each new employee that ICWU is bargaining agent for the plant, introduce each new worker to his shop steward, and continue the voluntary, irrevocable dues check-off.

H. A. Bradley, president of ICWU, is asking all union locals to send contributions to support the Lompoc strike. And at Bartow, where mediation meetings have been unavailing, the union says its members are resolved to continue their strike until a "suitable" agreement is reached.

Disparate Pay Rates

There's a mile-wide spread in the wage rates for various segments of the chemical industry; latest report is that soap and glycerin workers are averaging $23 a week more than fertilizer workers.

For the chemical industry as a whole, wages have been climbing and workweeks have been shortening in recent months. Average weekly earnings in May (latest official figures) were $69.73 for hourly-paid workers, and

CURRENT LIST OF DPA-CERTIFIED FACILITIES

Company, Location	Product	Amount Certified	% Certified
Ozark-Mahoning Defense Co., Deming, Grant County, N. Mex.	Fluorspar, acid grade	$ 589,836	60
Virginia-Carolina Chemical, Nichols, Fla.	Cryolite	474,000	85
Pittsburgh Steel, Monessen, Pa.	Metallurgical coke, coal chemicals	11,240,000	85
United States Steel, Lorain, Ohio	Metallurgical coke, coal chemicals	6,303,000	50
Phillips Petroleum, Phillips, Tex.	Aviation alkylate	437,670	90
		16,190	50
Phillips Petroleum, Brazoria County, Tex.	Butanes	110,000	50
		220,000	40
		1,100,000	90

the average work week was down to 40.9 hours.

Two-Year Lag: That the fertilizer business is not a fertile field for wages is shown by this contrast, based on a report by the Bureau of Labor Statistics: If synthetic rubber workers' wages remain at their present level, and if fertilizer hourly rates continue to rise each month by about 2½¢ as they did from March to May, it would take more than two years for fertilizer wages to catch up with synthetic rubber pay rates.

Highest average hourly rate as of May was the $1.964 of the synthetic rubber workers, with soap and glycerin makers averaging 4¢ less. Average for the entire industry was $1.705 an hour.

Work weeks of less than 40 hours each were recorded in three lines: synthetic rubber, 39.1 hours; synthetic fibers, 39.6; and drugs and medicines, 39.7 hours. Longest work week was 44.1 hours, averaged in the oils and fats business.

Safety in Chemicals

Coke plants using by-product ovens to produce coal-tar chemicals are safer and more productive than the old-style beehive ovens, according to a new report from the U.S. Bureau of Mines.

By-product plants, which accounted for about 90% of the nation's coke production last year, had a safety record of 7.03 injuries per million tons and a productivity record of 9.638 tons per man-day. Corresponding figures for beehive plants in 1951 were 31.76 injuries and only 8.916 tons.

Overall, it was a good year for the coking plants. Total production climbed by 9.7% to nearly 85 million tons, while the injury rate dipped 7.8% to 9.20 injuries per million tons. Out of the 778 injuries, only ten were fatal.

CHRIS GRUBB-McGRAW-HILL

Making Ready for Ohio AEC Plant

TOP MEN of the new $1.2 billion atomic energy project gather here at Portsmouth, in southern Ohio, where they conferred with local officials on details in locating the plant 22 miles north of there in Pike County. They are (l. to r.) Robert E. Rose, assistant manager of the new project; Gordon Molesworth, Oak Ridge manager; Kenneth A. Dunbar, new project manager; and George Holley, construction contractor superintendent.

The latest AEC plant, to occupy a 6,500-acre site, will produce uranium 235 for atom bombs by gaseous diffusion. Construction will take four years, although parts of the plant will be in operation sooner. It is the only wholly new plant in the government's $3 billion atomic energy expansion program; other appropriations cover extension of facilities already built or under construction.

Important factors in selecting the site were potential availability of power at reasonable cost in the large quantities the operation will require, and availability of water. Existing facilities will supply power for early operations – 400,000 kw. – and new power plants will supply eventual maximum requirements of 1.8 million kw.

Principal construction contractor for the plant is Peter Kiewit Sons, Omaha, Neb. Concerns so far scheduled to handle various phases of design and architectural work include: Union Carbide and Carbon; Giffels and Vallet, Detroit; Sargent and Lundy, Chicago; Singmaster and Breyer, New York; Smith, Hinchman and Grylls, Detroit; Burns and McDonnell, Kansas City, Mo.; and Holabird and Root and Burgee, Chicago.

In accordance with its current policy, AEC will not build and operate a community as it did for the Oak Ridge project.

LEGAL

Druggist Shell Game: Slipping ascorbic acid tablets to a patient whose prescription calls for cortisone won't work out, a Washington retail druggist has found out. When the patient failed to come up with the cortisone response, the physician tipped the Food and Drug Administration. In criminal court, the druggist was fined $500 and given a one-year suspended jail sentence.

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Fertilizer Firm Sued: Charging that the Best Fertilizer Company of Texas overcharged its customers by a total of $355,002 during the past 18 months, the Office of Price Administration is suing the company in Houston for triple that amount. The U.S. attorney says "a large number" of transactions, mostly to corporations, is involved. The company and its parent firm, Best Fertilizer of Oakland, Calif., make ammonium sulfate.

•

The chemical industry isn't alone in suffering from an increasing number of work stoppages this summer—nearly all sectors of business in the United States are being vexed by the rising tide of strikes.

Between the end of World War II and June 1950, the nation lost an average of four million man-days a month because of labor disputes. From December 1950 through March 1952, the average was 50% less. Then the honeymoon ended.

Work stoppage losses climbed to 5.3 million man-days in April, 7.5 million in May, and 11.5 million in June. No doubt the July idleness figure will be even higher, due in part to the steel strike.

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"Wanton and reckless misconduct" is the way the U.S. Circuit Court of Appeals characterizes a chemical company's failure to include a specific

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U.S.I. CHEMICAL NEWS

August 23 ★ A Series for Chemists and Executives of the Solvents and Chemical Consuming Industries ★ 1952

Methionine Improves Healing of Burns

Methionine has been found to be useful in promoting the rapid healing of burns when applied locally. It has been known for quite some time that methionine helped promote healing when given orally. However, it now appears that when methionine is applied directly to the injured area, healing processes are speeded up. This is an entirely new concept in the use of methionine which may have far-reaching implications.

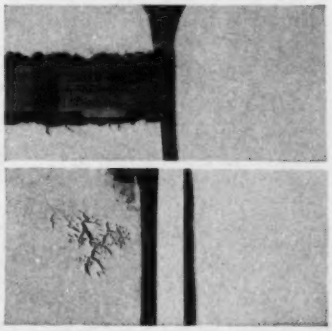
New Device Runs Plant On Enamel Baking Fumes

Thin porcelain rods about five inches long, coated with catalytic alumina and platinum alloy, are enabling an enamel baking plant to operate on heat derived from fumes that previously were a nuisance, it was announced recently. Placed in the plant's vent chimneys, the rods or wands are claimed to burn fumes rising from the ovens and to turn the heat back to the ovens. All annoying odors have been eliminated, the firm says, and it is able to save 90 per cent of its former fuel bill. The cost of the process is expected ultimately to be low enough for use in homes where its cost would soon be covered by savings in fuel. The process would triple the heat obtained from a gallon of fuel, it is said, and at the same time it would help solve an important air pollution problem.

U. S. I. Announces New Alkyd For Improving Latex Paints

Aroplaz 1274 Improves Adhesion, Water-Resistance, Freeze-Thaw Stability; Formulations Have Greater Range of Pigmentation, Are More Economical

Aroplaz 1274, a new resin developed specifically for use in latex emulsion paints, is now in production at U.S.I. Described as a long oil, oxidizing type alkyd of 100 per cent solids content, Aroplaz 1274 will at last enable paint manufacturers to produce superior latex-type finishes, still retaining the desirable features that appeal to portions of the buying public.



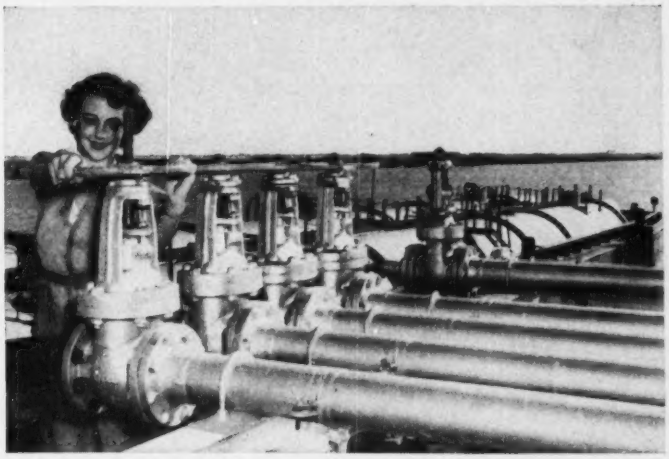
In the above test panels, films of commercial latex paints are on the left, films of latex paint modified with Aroplaz 1274 are on the right. Top panels show results after both paint films were submitted to 500 cycles in a Gardner straight line scrub tester. Bottom ones show results of water spotting 24 hours after the films were applied.

One deficiency common to most paints based on styrene-butadiene copolymer emulsions has been that the cohesive properties of the latex particles are often greater than their adhesive properties – with the result that the paint film can easily be stripped from the wall or undercoat. Aroplaz 1274 effectively corrects this balance by giving its formulations greater adhesion to all types of surfaces. Latex paints made with Aroplaz 1274 can even be used over non-porous enamel or gloss

MORE

Super-Thin Vinyl Film Obtained by New Process

Development of a process which makes possible the manufacture of a strong, durable, vinyl plastic film in thicknesses of one thousandth of an inch or less was announced in a recent report. The process is said to utilize a "blow extrusion" method whereby the vinyl film is extruded through a circular die at temperatures between 375 and 425° F. Films thus produced are claimed to have excellent clarity and good insulating properties, and the material, tubular in shape, can be obtained in widths exceeding 100 inches. Up to now, it has not been possible to economically produce such extremely thin films, it is said. The new process is expected to find extensive markets in industrial packaging.



The young lady in the photo is turning the valve that recently initiated the first barge shipment of ethanol, propanol, and butanol from U.S.I.'s Brownsville, Texas terminal. Produced at the giant hydrocarbon synthesis project there, the chemicals were shipped to New Orleans and Chicago via the Inter-Coastal Canal and the Mississippi River. The young lady is Miss Marion Boyle, daughter of U.S.I. plant manager Stewart Boyle.

Sodium Dispersions

Sodium users will be extremely interested in a recently issued technical bulletin on sodium dispersions – new, highly reactive forms of metallic sodium. The 4-page bulletin includes recent data available from the company's laboratories on the formulation of sodium dispersions in various media. Typical combinations of media, dispersants and stabilizers are presented, together with sodium particle sizes in the resultant systems. Sodium content, stability, fluidity, other pertinent properties of the dispersions are also discussed.

CONTINUED

New Alkyd

trim. In addition, they give films with far greater washability than most latex paints now on the market.

Stable to Freezing and Thawing

Another long-felt need which Aroplaz 1274 supplies in latex formulations is greater stability to freezing and thawing. Low temperatures, which complicate storage and transportation problems by causing most latex paints to permanently coagulate after one freeze-thaw cycle, have no effect after numerous cycles on Aroplaz 1274 formulations. Paints made in U.S.I.'s laboratories have been used successfully after they have been frozen solid and thawed a number of times.

Aroplaz 1274 greatly reduces the long curing time ordinarily required for latex paints to acquire washability, and it imparts high water-resistance during early stages of drying—another quality which most paints of this type lack. Tests in U.S.I.'s resin laboratories have shown that the blisters usually resulting from water spots on newly applied latex films are entirely absent when the paints are made with Aroplaz 1274.

Greater Range of Pigmentation

The new resin offers a greater range of pigmentation than has been possible up to now in latex formulations. Pigment loading in Aroplaz 1274 paints can be adjusted to give sheens all the way from satin to true flat. In addition, the resin allows a greater volume of low-cost extender pigments to be used, which makes for more economical formulations. The greater hiding power of Aroplaz 1274 finishes is another feature of its economy because the paints can be used equally well over dark or light areas, usually with only one coat being required for the job. Aroplaz 1274 finishes exhibit superior color retention even on long exposure to sunlight.

Aroplaz 1274, containing no solvent, is practically odorless and is expected to increase further the sales appeal that latex paints already have on this count. Paints properly formulated with this resin have much less odor than others now on the market that have been examined by U.S.I.

See Ion Exchange Uses In Gold, Silver Recovery; Water Softeners for Autos

Ion exchange resins may soon be used in the commercial recovery of precious metals such as gold and silver from ore and plating solutions, according to a recent report. The resins are high capacity cation and anion exchange resins, capable of recovering metals in greater quantities and at faster rates than have been possible up to now. Similar resins are already being used to recover zinc from rayon plant wastes, tin from alkaline plating baths, and copper and chromium from electroplating, anodizing and stripping solutions.

Auto Water Softeners

Motorists may also become large users of ion exchange resins as the result of a new miniature water softener for automobile cooling systems. Designed to give protection against scale and corrosion, the device consists of a plastic cartridge which contains a mixture of a cation exchange resin and a corrosion inhibitor sealed in a polyethylene-treated sack. Water, bypassed from the main stream of the heater line, is treated by passing it through the sack at the rate of about 24 quarts per hour at road speeds of 30 to 40 mph. The resin is compatible with anti-freeze materials, and a cartridge lasts approximately six months, it is claimed.

Use Thermocouple to Grow High-Melting Crystals

An improved technique for growing small crystals of high-melting compounds is reported to center around the use of a hot-thermocouple which heats the specimen at the same time that it measures the temperature. A small amount of the material is placed on the thermocouple, melted, then cooled by manual control while crystal formation is watched through a stereoscopic microscope. The growth of unwanted crystals is thus minimized, it is said, allowing the growth of more satisfactory single crystals.

TECHNICAL DEVELOPMENTS

Information about manufacturers of these items may be obtained by writing U. S. I.

To facilitate detection of titration end points, a specially designed flask has a side arm near the bottom into which flow of liquid can be controlled to make the color more visible. **(No. 831)**

Concrete and plaster slabs will float on water indefinitely, it is claimed, if a new waterproofing powder, which prevents capillary action of moisture in hardened concrete, is added to the mix. **(No. 832)**

Ordinary window glass is made shatterproof by spraying with a new liquid plastic, said to hold glass together better than wire glass when struck and to retain safety qualities for at least five months. **(No. 833)**

Flameproof coatings for composition roofs, metal, masonry and concrete waterproofing, textiles, and wallboard are now in production. Applied by conventional methods, coatings will not peel or flake, the manufacturer says. **(No. 834)**

A new industrial and automotive lubricant, containing no metallic soaps or fatty acids, will not melt or freeze in temperatures ranging from sub-freezing to 500° F., and is unaffected by boiling water, according to the maker. **(No. 835)**

To prevent slippage of belts and pulley faces, a liquid belt dressing is available in spray containers. Dressing is said to be quickly absorbed, non-injurious to leather, and to impart a high coefficient of friction. **(No. 836)**

A new plastic coating for paper is claimed to offer excellent grease- and water-proofness, to be non-toxic and non-inflammable, and to be suitable for paper plates, cartons, trays, etc., used for food. **(No. 837)**

An airless spray gun which operates on a centrifugal principle reportedly eliminates the rebounding of paint that accompanies air spraying and can be used in small spaces that air guns cannot reach. **(No. 838)**

A new home oven cleaner for porcelain, enamel, and steel surfaces is said to make all hard encrusted materials easily removable without scraping or use of other chemicals. **(No. 839)**

A high solids liquid neoprene solution is now available for use as an industrial maintenance coating. Applied by brush, it is claimed to cure at ordinary temperatures to a thick resilient protective film. **(No. 840)**

PRODUCTS OF U.S.I.

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Amyl Alcohol (Isoamyl Alcohol)
Butanol (Normal-Butyl Alcohol)
Fusel Oil—Refined
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Ethanol (Ethyl Alcohol)
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U.S.I. Permanent Anti-Freeze

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Diamyl Phthalate
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Arofene*—pure phenolics
Aroflat*—for special flat finishes
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Aroplaz*—alkyds and allied materials
Aropol†—copolymer modified alkyds
Ester Gums—all types
Natural Resins—all standard grades

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Piperonyl Butoxide
Piperonyl Cyclonene
Pyrenone* Concentrates: Liquid & Dust
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Rotenone Products: Liquid & Dust

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Triple-Mix Repellents

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Acetoacet-ortho-chloroanilide
Acetoacet-ortho-toluidide
Acetoacet-para-chloroanilide
Ethyl Acetoacetate
Ethyl Benzoylacetate
Ethyl Sodium Oxalacetate

FEED PRODUCTS
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Curbay B-G*
DL-Methionine (Feed Grade)
Niacin, U.S.P.
Riboflavin Concentrates
Special Liquid Curbay*
U.S.I. Vitamin B_{12} and Antibiotic Feed Supplements
Vacatone* 40

OTHER PRODUCTS
Collodions
Ethylene
Methionine (Pharm. Grade)
Nitrocellulose solns.
Propionic Acid
Pib*—Liquid Insulation
Special Chemicals and Solvents
Urethan, U.S.P.
Acetaldehyde
Propionaldehyde

*Reg. U.S. Pat. Off.
†Trademark Pending

U.S.I INDUSTRIAL CHEMICALS CO.
Division of National Distillers Products Corporation

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warning in the label on a container of corrosive material.

The Circuit Court has upheld the verdict of a jury in New Jersey that awarded $250,000 to a Minnesota plumber who was painfully injured when a drain-cleaning mixture exploded, disfiguring his face. In suing Blue Seal Chemical of Roselle, N.J., he declared that his earning power was severely impaired.

This product, the court found, consisted of sodium hydroxide, powdered aluminum, and a "supposedly inert substance." In the particular batch that was used by the plumber at the time of the explosion, there was an extra quantity of aluminum, which, according to testimony, increased the vigor of the chemical reaction. The label contained no warning of the product's dangerous nature.

•

OPS Kills Contract: Brown-Allen Chemicals, Inc., doesn't have to go through with a contract for purchase of fish oil, now that a price ceiling has been imposed by OPS, the New York Supreme Court has ruled. Brown-Allen refused to buy the oil after the price ceiling was announced, even though that ceiling was below the price agreed on. "By act of government," the court says, "there was complete frustration of performance, excusing the performance as a matter of law."

•

AEC Withholds Pay: Because his design of an ultra-centrifuge for separation of isotopes has not been used by the Atomic Energy Commission, the AEC's Patent Compensation Board has denied the claim of Helmut W. Schulz of Charleston, W. Va. It pointed out that Schulz has been granted a patent, and now has opportunity for commercial demonstration of his invention.

Enter the Villain

Grease and oil, or more specifically certain ingredients in the lubricants, are being spotlighted this week as the villain in the Disease X mystery.

Disease X (hyperkeratosis) may be reduced or even eliminated on farms, according to the U. S. Department of Agriculture, if cattle are kept away from tractors, combines, or other farm machinery where it may be possible for them to lick up grease or oil.

After research conducted at 17 state

Upping the Reading Rate

FASTER SCREENING and assimilation of the huge quantities of reading its technical and supervisory personnel must examine are the aims of the Army Chemical Corps in registering 40 men for a 25-hour course in reading, given by the Foundation for Better Reading, Chicago. The course will be a test run for the whole Chemical Corps Material Command. Here Col. Victor C. Searle (l.) uses the "reading accelerator", which has a blind that descends over written matter at a steadily faster rate, thus forcing speed; Lt. Col. Wilson Thomas employs a Tachistoscope, which flashes increasingly longer numbers, thus increasing visual span.

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agriculture experiment stations, USDA scientists seem to agree that cattle may become affected with Disease X by consuming highly chlorinated naphthalenes contained in certain lubricants, or unknown toxic ingredients in feedstuffs. Research workers have produced the disease experimentally by giving the cattle the suspected substances in controlled feeding tests. The disease also has been produced with batches of processed concentrates, roofing asphalt, and timothy hay from one particular field.

Lock the Barn: Meeting at the University of Tennessee's Agricultural Experiment Station in Knoxville to discuss their findings, representatives of the USDA and the state experiment stations also warned farmers to keep cattle away from crank case oil and old oil containers. They said drainage from around grease racks and in farm machinery sheds should not be allowed to contaminate lots or pastures to which cattle have access.

The USDA promises to continue research on this malady that causes cattle to waste away, cutting into both milk and beef production. The Bureau of Animal Industry will keep plugging away looking for:

- Other possible causes of Disease X, and products that might contain toxic chemicals.
- Methods of prevention and control.

Meanwhile, the report from the 16 other experiment stations tends to support the University of Tennessee's earlier finding (*CW Newsletter, July 12*) that chlorinated naphthalenes are one of the causes of Disease X.

Rural Exodus

Chemicals are speeding up the exodus from American farms, enabling the farmer to produce more foods and fibers with fewer farm hands.

This trend is not new, but now it's being stepped up toward a rate that will leave only a handful of persons making their living as farmers, according to a report by the staff of the Senate Committee on Labor and Public Welfare.

Chemicals considered in this report do not include fertilizers; among them, for example, are coatings for pelletized seeds, chemicals that regulate the time of fruiting, herbicides, and chemicals to defoliate cotton plants. The committee also noted that the future might hold a big expansion in hydroponics and in manufacture of fats and proteins from carbohydrates.

In 1820, the United States was a nation of farmers, with more than 70% of the labor force engaged in agriculture. One hundred years later, this figure was down to 30%; in 1950 it stood at 15%; and the committee's prediction for 1970 is only 7%.

Corporate Contest

Forty-two chemical companies are in the running for the bronze "Oscar of Industry" award for the best financial report for 1951.

In this contest, annual reports are judged for informative content, orderly arrangement, and typographical appearance. Presentation will be made at the Financial World banquet in New York's Hotel Statler on Oct. 28.

Also selected for the final judging are stockholder reports from 28 makers of drug store products, 11 manufacturers of paint and coatings, 12 plastics companies, 13 rubber companies, and 10 firms that make rayon and other synthetic fibers.

Layoffs In Vogue

Employment in the chemical industry has been slackening off steadily since hitting a post-war peak last autumn.

There was a drop of 12,000 workers from April to May, the latest month for which Bureau of Labor Statistics figures are available. From the high-water mark of 764,000 last September, chemical employment had declined by 22,000 to a total of 742,000 in May.

Among chemical production workers, employment had dipped from 544,000 last October to 518,000 in May, a slump of nearly 5%. The average for 1950, the year in which the Korean action began, was 496,000 production workers.

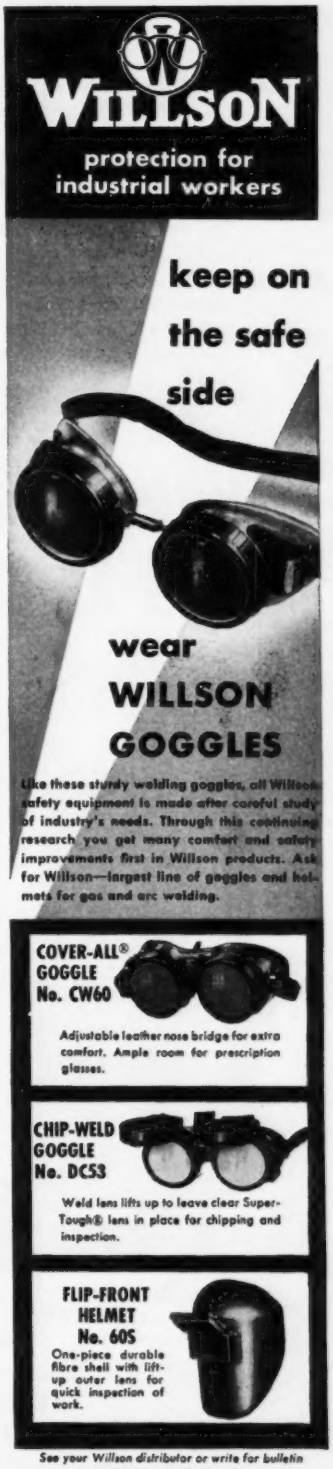
Implications of this dwindling employment: Defense production quotas are being met more readily, efficiency has been increasing in plants that were expanded rapidly for defense work, and many chemical plants have produced in excess of current demand and have started stockpiling and cutting back on production.

FOREIGN. . . . . .

Acrylic Fiber/Germany: Phrix Gesellschaft g.m.b.H. (Hamburg) is marketing its Redon fiber, said to be similar to the American Orlon fiber but with greater elasticity.

•

Sulfur/Mexico: Gulf Sulphur of Delaware, operating in Mexico, reportedly has found sulfur at the bottom of a 349-foot drilling near San Cristobal. It believes that the deposit is the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•

Reichhold/Great Britain: Reichhold Chemicals, Ltd., has sold common and preferred stock to the British public for capital with which to acquire four plastics and resins firms. It will acquire better than 90% of the stock of Beck Koller & Co. (England) and entirely take over the stock of James Beadel, Vinyl Products and Vinatex. Beck Koller has been a subsidiary of the U. S. Reichhold Chemicals, which will now hold a substantial interest in the new firm.

•

Wood Pulp/Africa: Two European industrial giants will combine efforts in setting up a high alpha pulp mill in Natal. The two: Britain's Courtaulds, Ltd., and Italy's SNIA Viscosa. They will join with the Industrial Development Corp. of South Africa in the project of making pulp from the fast-growing eucalyptus tree.

•

Selenium/Japan: Republic Chemical (Japan) Ltd. has begun operation of its selenium metal plant.

•

Bristol-Myers subsidiary Bristol Laboratories has joined with South American interests in forming Bristol-Labor S.A., which will manufacture and distribute Bristol products in Brazil. Bristol Labs earlier founded another subsidiary, Bristol Laboratories of Colombia.

• While the parent B-M has a number of foreign subsidiaries, the setting up of Bristol Lab subsidiaries is new. Elsewhere it has worked through agents and distributors.

•

Potash Palestine: Final arrangements for the semi-nationalization of the Dead Sea potash works have been completed. The government will hold a 51% interest in the new company, Palestine Economic Corp. (New York) and interests representing Palestine Potash Ltd. (former operator of the works) will also be represented.

• Prospective output of potash: 135,000 tons (100% K_2O) per year.

•

Ammonium Sulfate/Great Britain: ICI's ammonium sulfate production at Billingham will be cut 25%. Reason: falling off in home demand; more competition in overseas markets.

•

ICI of Australia & New Zealand is hoping for a reception to a new stock offer that will equal that awarded to a recent issue of company debentures, which was heavily oversubscribed.

It is hoping to raise the equivalent

Columbia-Southern earnestly solicits you as a customer because it earnestly desires to serve you.

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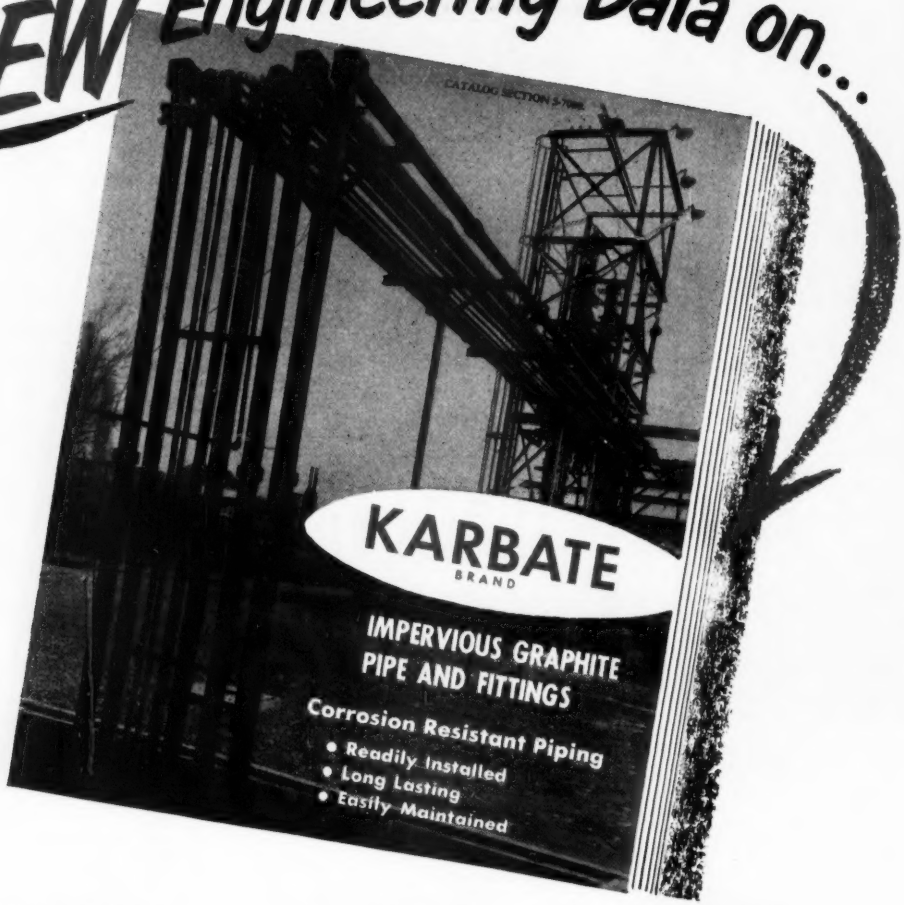
NEW Engineering Data on...



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of $6.5 million to finance facilities for polyvinyl chloride, chlorine, caustic, agricultural chemicals, pesticides and other materials.

DPA Tells Score

Two years from next January, output of 43 chemicals for which Defense Production Administration has spelled out expansion goals will be half again as much as in January 1951. Considerable expansion, of course, has taken place for products not included in the goals.

Commending the industry for its cooperation in supporting defense aims, NPA Chemical Division's George Holbrook pointed out that it "has come forward with firm plans to meet more than two-thirds of the established goals. Many of the goals represent four or five times the expansion which would be undertaken under normal conditions."

COAL TAR CHEMICALS

Aniline

1951 capacity, 106.4 million pounds; expansion, 28.6 million (26%); requirements, 135 million.

Anthraquinone Vat Dyes

1951 capacity, 37 million pounds; expansion, 11 million (29%); requirements, 48 million.

Maleic Anhydride

1951 capacity, 27 million pounds; expansion, 22 million (81%); requirements, 49 million.

Naphthalene

1951 capacity, 351 million pounds; total expansion needed, 204 million (58%); expansion yet unauthorized, 40 million (9%); requirements, 555 million.

Phenol

1951 capacity 343.6 million pounds; expansion, 280 million (81%); requirements, 623.6 million.

Phthalic Anhydride

1951 capacity, 227.7 million pounds; expansion, 140 million (61%); requirements, 367.7 million.

Quinoline

1951 capacity, 1.7 million pounds; total expansion needed, 4.1 million (241%); expansion yet unauthorized, 3 million (176%); requirements, 5.8 million.

Resorcinol

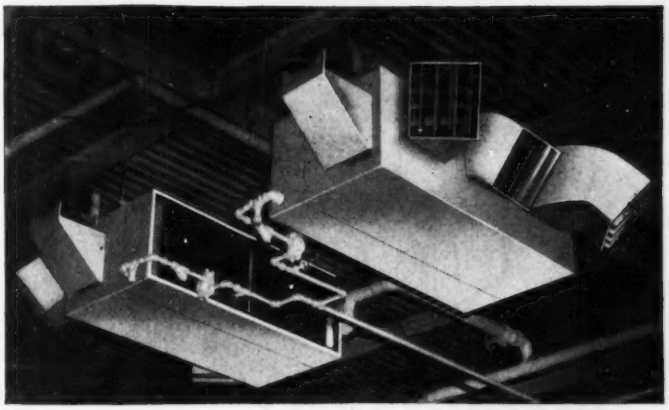
Capacity needed by January 1, 1954, 10 million pounds; expansion yet unauthorized, 2 million.

OTHER ORGANICS

Butadiene

1951 capacity, 61 million pounds, ex-

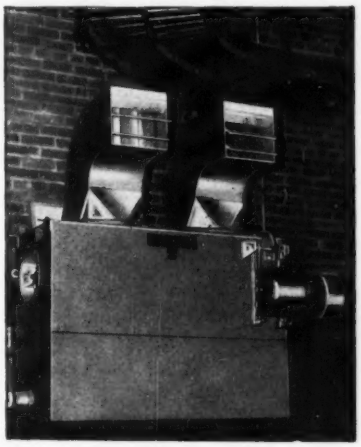
Will You Be Ready to "TURN ON THE HEAT"
FOR NEXT WINTER'S PRODUCTION?



It's High Time to Investigate

"Buffalo" UNIT HEATERS

Now's the time to make sure that warehouse, that shop, that mill or that production line is going to be WARM next Winter, and not a constant source of absenteeism and loss of profits! And it's relatively inexpensive when you use "Buffalo" Heaters. They're very simple to install. Complete selection of the types and sizes you need — for instance, the efficient "Buffalo" Lowboys shown above. Easily installed, they take up no floor space.



ABUNDANT FRESH, WARM AIR!

At left, a "Buffalo" Highboy Heater with fresh air intake through a side wall is doing a thorough heating and ventilating job. Efficient "Buffalo" mixed-flow fans and Aerofin coils assure economical, positive heat distribution with minimum steam pressure. Why not look into this low-cost "Buffalo" heating NOW? Just write for Bulletin 3704-A.

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AFFILIATES—BUTCHER-ARTHUR INC. WATERWAYS TRANSPORTATION, INC.

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Air Classifiers

Dry grinding is easy when you use a Hardinge Mill and Air Classifier. With the Loop Classifier arrangement a product varying from 20 mesh to 98% passing 200 mesh can be obtained. With a Hardinge Superfine Classifier (illustrated), a 99½% passing 325 mesh product is obtainable.

The Hardinge Conical Mill is illustrated; Hardinge also makes Tricone, Tube and Rod Mills, for continuous grinding applications.

Write for Bulletin 17-B-36, stating your grinding problem.

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pansion 101 million (165%); requirements, 162 million.

Ethylene Glycol

1951 capacity, 653 million pounds; expansion, 197 million (30%); requirements, 850 million.

Formaldehyde (37%)

1951 capacity, 1,325 million pounds; total expansion needed, 350 million (26%); expansion yet unauthorized, 48 million (3%); requirements, 1,675 million.

Glycerine

1951 capacity, 225 million pounds; total expansion needed, 53 million (23%); expansion yet unauthorized, 23 million (12%); requirements, 278 million.

Methanol (synthetic)

1951 capacity, 174 million gallons; expansion, 52 million (29%); requirements, 226 million.

Ethanol

1951 capacity, 398 million gallons; expansion, 12 million (3%); requirements, 410 million.

Sebacic Acid

1951 capacity, 15 million pounds; expansion, 10 million (67%); requirements, 25 million.

Styrene, vinyl toluene

1951 capacity, 626 million pounds; expansion, 584 million (93%); requirements, 1,210 million.

Carbon tetrachloride

1951 capacity, 224 million pounds; expansion, 107 million (47%); requirements, 331 million.

Methyl chloride

1951 capacity, 34 million; expansion, 38 million (111%); requirements, 72 million.

Perchlorethylene

1951 capacity, 105 million pounds, total expansion needed, 75 million (71%); expansion yet unauthorized, 8 million (7%); requirements, 180 million.

Trichlorethylene

1951 capacity, 277 million pounds, total expansion needed, 123 million (44%); expansion yet unauthorized, 10 million (4%); requirements, 400 million.

Methylene chloride

1951 capacity, 39 million pounds; total expansion needed, 70 million (179%); expansion yet unauthorized, 34 million (87%); requirements, 109 million.

INORGANICS

Activated carbon

1951 capacity, 74.7 million pounds; expansion, 22.7 million (30%); requirements, 97.4 million.

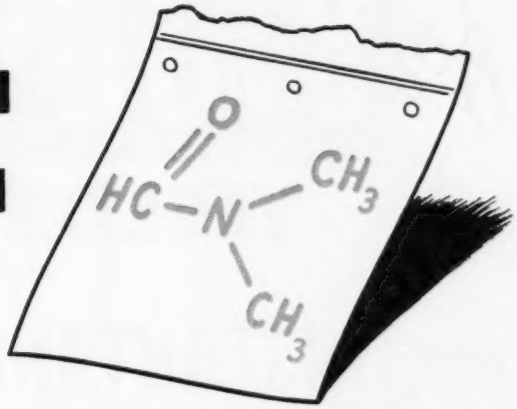
Carbon black

1951 capacity, 1,520 million pounds; ex-

DU PONT

DMF

(DIMETHYL FORMAMIDE)



A close approach to the "Universal Solvent"

In the short time that Du Pont DMF (Dimethyl Formamide) has been commercially available, a host of new and profitable uses has been developed. And the versatility of this powerful, selective solvent is such that many more exciting possibilities remain unexploited.

DMF is the lowest member of the series of N-dialkyl amides which, by virtue of two adjacent, highly polar functional groups, is a unique solvent for a wide variety of hard-to-dissolve organic and inorganic materials.

PHYSICAL PROPERTIES

Appearance	Colorless, mobile liquid
Molecular Weight	73.09
Boiling Point	153°C (307°F)
Freezing Point	−61°C (−78°F)
Specific Gravity 25°/4°C	0.9445
Refractive Index nD 25°	1.4269
Viscosity 25°C	0.802 cp.
Flash Point T.O.C.	153°F
Solubility	Miscible with water and most common organic solvents.

OUTSTANDING SOLVENT POWER FOR:

Acetylene	Inorganic salts
Butadiene	Petroleum constituents
Acid gases	Dyestuffs and pigments
Vinyl resins	Pharmaceutical intermediates

In uses as:

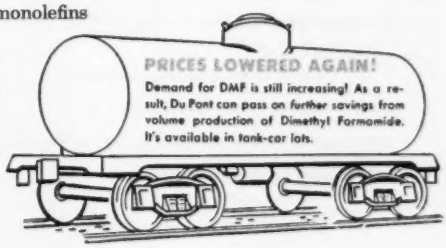
Reaction medium	Processing solvent
Gas recovery solvent	Extractant
Formulation solvent	

HIGH SELECTIVITY DMF is highly selective between acetylene and its homologues, diolefins, monolefins and paraffins, as well as aromatics and alkanes. With inert gases and paraffinic hydrocarbons relatively insoluble, DMF is particularly attractive as a gas and petroleum refining solvent.

DESIRABLE CHARACTERISTICS

Chemically and thermally stable
High boiling point
Low freezing point
Non-corrosive
High flash point
Water miscibility
Low viscosity
Wide organic and inorganic solubility
Low molecular weight

and . . .


PRICES LOWERED AGAIN!
Demand for DMF is still increasing! As a result, Du Pont can pass on further savings from volume production of Dimethyl Formamide. It's available in tank-car lots.

FOR YOUR CONVENIENCE

E. I. du Pont de Nemours & Co. (Inc.)
Grasselli Chemicals Department, Wilmington, Delaware.

Please send me your new Technical Bulletin on Du Pont DMF (Dimethyl Formamide).

*Name*_____ *Title*_____

*Firm*_____

*Street*_____

*City*_____ *State*_____

DMF
(DIMETHYL FORMAMIDE)

DU PONT

150th Anniversary

BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

for BIGGER

YIELDS . . .

and INSTANTANEOUS REDUCTIONS . . .

LAH

(LITHIUM ALUMINUM HYDRIDE)

With ordinarily available equipment, at room temperatures or slightly higher, L A H as a reducing agent results in better, larger yields, and an appreciable saving of time. Reductions are carried out in atmospheric pressure systems. Metal Hydrides will welcome the opportunity to assist in achieving efficient safe plant layouts to meet specific L A H process requirements in the applications you intend to use.

L A H is a powerful reducing agent for organic compounds: acids, their derivatives, ketones, aldehydes and nitro compounds. As a reagent, L A H determines active hydrogen water and functional groups.

Write for Metal Hydrides new bulletin on safe handling of L A H.

L A H is now available free of royalties; the former requirements governing use license are removed. No increase in price . . . and ample quantities immediately available.

METAL HYDRIDES INC.

12-24 CONGRESS STREET • BEVERLY • MASS.

pansion, 800 million (52%); requirements, 2,320 million.

Calcium carbide

1951 capacity, 780,000 short tons; expansion, 450,000 (57%); requirements, 1,230,000.

Chlorine

1951 capacity, 2.2 million short tons; expansion, 1.23 million (55%); requirements, 3.43 million.

Hydrofluoric acid

1951 capacity, 94 million pounds; expansion, 36 million (38%); requirements, 130 million.

Hydrogen Peroxide

1951 capacity, 23.1 million pounds; expansion, 22.3 million (96%); requirements, 45.4 million.

Yellow iron oxide

1951 capacity, 13,000 tons; expansion, 12,000 (92%); requirements, 25,000.

Phosphorus

1951 capacity, 161,000 tons; expansion, 114,000 (70%); requirements, 275,000.

Oxygen

1951 capacity, 21.8 trillion cubic feet, total expansion needed, 12.8 trillion (58%); expansion yet unauthorized, 2.25 trillion (11%); requirements, 34.6 trillion.

Titanium dioxide

1951 capacity, 282,000 tons; total expansion needed, 88,000 (31%); expansion yet unauthorized, 27,000 (10%); requirements, 370,000.

Sodium chlorate

1951 capacity, 68 million pounds; total expansion needed, 77 million (113%); expansion yet unauthorized, 3 million (4%); requirements, 145 million.

Soda ash

1951 capacity, 5.7 million tons; requirements, 5.2 million.

Lithium compounds

1951 capacity, 3,815,000 pounds; total expansion needed, 6,185,000 pounds (162%); expansion yet unauthorized, 640,000 (17%); requirements 10 million.

Sodium cyanide

Requirements, 91.6 million pounds.

AGRICULTURAL CHEMICALS

DDT

1951 capacity, 102 million pounds; expansion, 53 million (52%); requirements, 155 million.

Benzene Hexachloride

1951 capacity, 18.5 million pounds; requirements, 18.5 million.

Lindane

1951 capacity, 0.7 million; expansion, 4.4 million (628%); requirements, 5.1 million.

Nitrogen

1951 capacity, 1,639,000 tons; expan-

The solvents and chemicals sold under the ENJAY* Oval Trade-Mark are outstanding for high quality and dependability. Every day more industries are calling on the long experience of the Enjay Company . . . making greater use of the diversified line of solvents and chemicals marketed by Enjay to increase product quality.

*Trade-Mark

ENJAY COMPANY, INC.
15 W. 51st St., New York 19, N.Y.

ENJAY markets this wide range of industrial chemicals:

Petrohol 91 (Isopropyl Alcohol)
Petrohol 95 (Isopropyl Alcohol)
Petrohol 99 (Isopropyl Alcohol)
Secondary Butyl Alcohol
Isooctyl Alcohol
Isopropyl Acetate
Secondary Butyl Acetate
Acetone
Methyl Ethyl Ketone
Ethyl Ether
Isopropyl Ether
Diisobutylene
Polypropylenes
Butadiene
Isoprene
Dicyclopentadiene
Aromatic Tars
Vistanex
Naphthenic Acids

PARAMINS—Additives for Lubricants and Fuels
Paratone
Parapoid
Paratac
Paranox
Paraflow

ENJAY products are marketed in bulk or in quantities to fit your requirements.

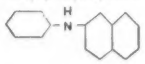
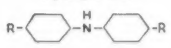
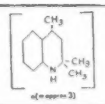
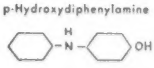
News about

B. F. Goodrich Chemical ***raw materials***

THESE Good-rite AROMATIC AMINES MAY FIT INTO YOUR DEVELOPMENT PROGRAMS

YOUR examination of the descriptive table below may point out applications for Good-rite aromatic amines in your development programs, or current production. Like all Good-rite chemicals, they have a long-standing reputation for purity and dependability.

Commercial quantities are available. For further information, prices and experimental samples, please write Dept. CK-2, B. F. Goodrich Chemical Co., Rose Building, Cleveland 15, Ohio. In Canada: Kitchener, Ontario. Cable address: Goodchemco.

Product and Formula	Description	Suggested Uses
Phenyl β-Naphthylamine 	Set point 106°—distills between 180°-200°C @ 3 mm.; available in commercial grade, flakes or powder; packed 250 lbs. in 61-gallon fiber drums.	Anti-oxidant, polymerization inhibitor, stabilizer and chemical intermediate.
Octylated Arylalkylated Diphenylamines 	A viscous oil soluble liquid consisting primarily of octylated diphenylamines; commercial quantities available—400 lbs. in 55-gallon steel drums.	Anti-oxidant, stabilizer—especially for petroleum based oils and greases.
Trimethyl-dihydroquinoline Polymer 	Softens at 75°C; clear amber pellets available commercially—225 lbs. in 61-gallon fiber drums.	Chemical intermediate, anti-oxidant, inhibitor, especially for petroleum based oils and greases.
p-Hydroxydiphenylamine 	Melting point, approximately 50°C; commercially available as a gray solid—200 lbs. in 25-gallon steel drums.	Anti-oxidant, chemical intermediate especially in the dyestuffs industry for synthesis of azo, carbazole and sulfur dyes, polymerization inhibitor.

B. F. Goodrich Chemical Company
A Division of The B. F. Goodrich Company

Good-rite
CHEMICALS

GEON polyvinyl materials • HYCAR American rubber • GOOD-RITE chemicals and plasticizers • HARMON organic colors

sion, 1,291,000 tons (78%); requirements, 2,930,000.

PLASTICS MATERIALS

1951 capacity, 2,126 million pounds; total expansion needed, 2,520 million (118%); expansion yet unauthorized, 993 million (46%); requirements, 4,646 million.

ANTIBIOTICS

Penicillin

1951 capacity, 250 trillion units; expansion, 350 trillion (140%); requirements, 600 trillion.

KEY CHANGES . .

Paul R. Larimer: To general sales manager, Ansul Chemical Co., Marinette, Wis.

Alfred M. Esberg: To vice president, American Potash & Chemical Corp., Los Angeles, Calif.

Raymond E. Lapean: To managing director, Cyanamid Products Ltd., New York, N.Y.

George L. Brown: To vice president in charge of manufacturing, Caldwell Chemical Co., Inc., New York, N.Y.

Otto J. Blank: To vice president in charge of production, R. M. Hollingshead Corp., Camden, N.J.

Oliver DeGarmo: To assistant director of research, Monsanto Chemical Co.'s Organic Chemicals Division, St. Louis, Mo.

Tom R. Moore: To general sales manager and assistant to president, General Dyestuff Corp., New York, N.Y.

John Crowther: To assistant sales manager, Stauffer Chemical Co., New York, N.Y.

Warren M. Berrell: To director, economic studies of new manufacturing fields, J. T. Baker Chemical Co., Phillipsburg, N.J.

Harry L. Smith, Jr.: To staff manager, product sales, Aluminum Co. of America, Pittsburgh, Pa.

R. S. Milton: To purchasing agent, Filtrol Corp., Los Angeles, Calif.

Alfred G. Raufer: To sales director, Michigan Chemical Corp., St. Louis, Mich.

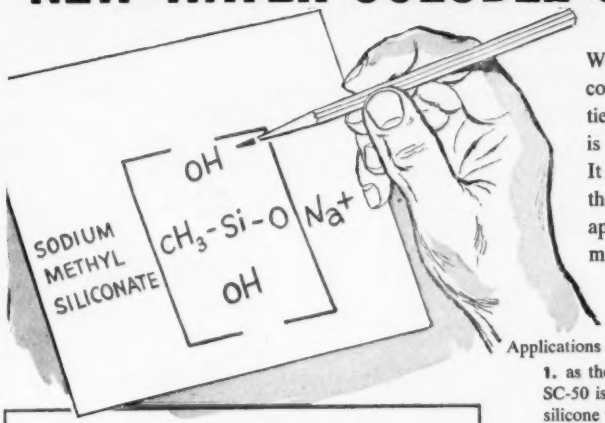
J. Gordon King: To general manager, Kaylo division, Owens-Illinois Glass Co., Toledo, O.

DIED . . . . . .

F. Abbiati, vice-president, Monsanto Chemical Co., and general manager, plastics division, at Springfield, Mass.

WANTED!

Applications for General Electric's NEW WATER SOLUBLE SILICONE, SC-50



Where can *you* use a new General Electric silicone with these unusual and original properties? SC-50, a reactive chemical intermediate, is a water solution of sodium methyl siliconate. It offers new possibilities for manufacturers in the field of silicone water repellents. It may be applied from water solution; it is nonflammable; and it may be cured without heat.

POSSIBLE USES

Applications for SC-50 might include its use—

1. as the active agent in masonry water-repellent formulations. SC-50 is more effective on gypsum and limestone than previous silicone water repellents.
2. in integral mixes of cement paint, gypsum, and concrete.
3. as an additive to water-base paints to improve washability.
4. to make water-repellent aerogels.
5. as a water repellent for textile and paper products.

COMPOSITION AND PROPERTIES OF SC-50

Total solids	31.2 ±2.8%
Total base (titrated as Na_2O)	9.5 ±0.5%
Total silicone (as $CH_3SiO_{1.5}$)	20.0 ±0.5%
Specific gravity	1.23—1.25
pH	about 13
Color	Gardner 3 max.
Solubility	Miscible in all proportions with water, methanol, ethanol, aqueous formaldehyde. Slightly miscible with n-propanol, i-propanol, acetone, dioxane, higher alcohols, ketones and ethers.
Solvent	Water

REACTIVITY

In addition to its water-repellent properties, SC-50 has marked possibilities as a chemical intermediate. With salts of other metals such as calcium and lead, it forms relatively insoluble, easily hydrolyzed salts, e.g., calcium methyl siliconate. Quaternary ammonium salts react similarly, giving quaternary ammonium methyl siliconates with a variety of solubility and hydrolytic characteristics. With aluminum salts it forms neutral solutions which are stable at use dilutions and which are effective water repellents. Experimentally, it has been used to make copper methyl siliconate to impart water and mildew resistance to textiles.

WHERE CAN YOU USE SC-50?

Technical data on SC-50 is now available. If you think you might take advantage of the SC-50 properties in your manufactured products, write us on your company letterhead or enclose the attached coupon.

G-E SILICONES FIT INTO YOUR FUTURE

GENERAL ELECTRIC

130-5

General Electric Company
Section 130-5C, Waterford, N. Y.

Please send me, without obligation, technical data on SC-50.

Name_____

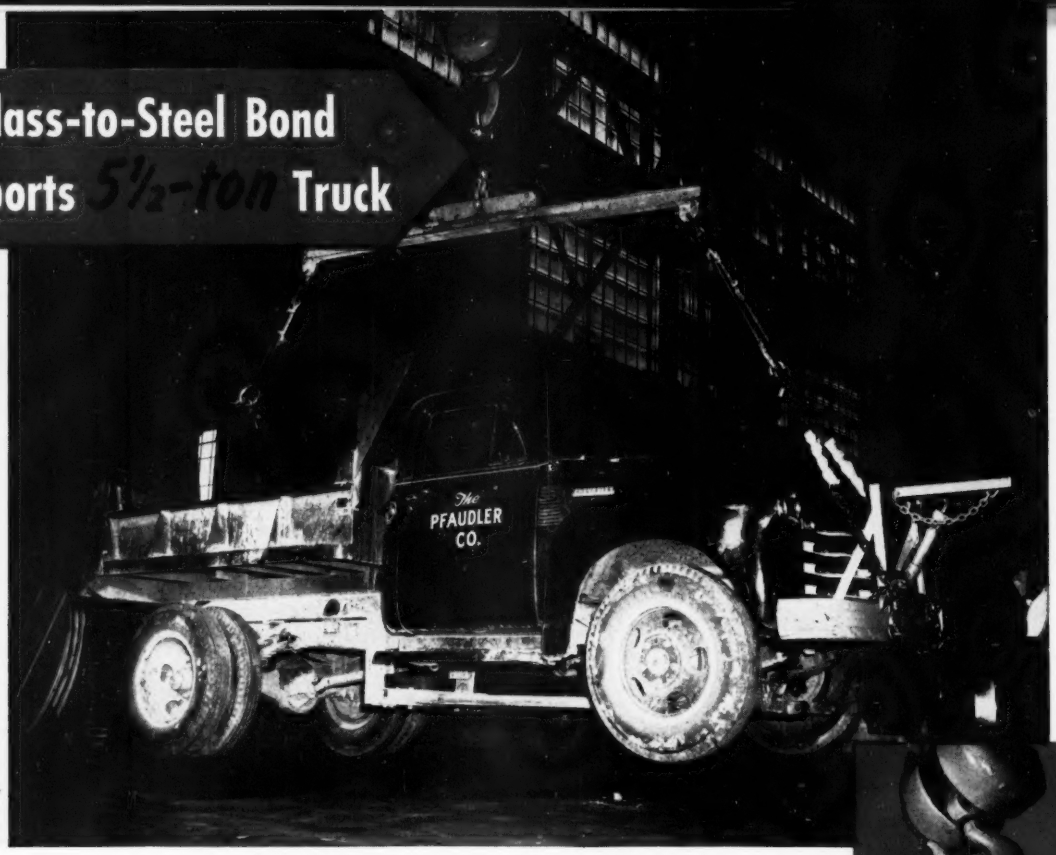
Firm_____

Street_____

City_____ Zone____ State_____

(In Canada, mail to: Canadian General Electric Company, Ltd., Toronto)

Glass-to-Steel Bond Supports 5½-ton Truck



The corrosion resistance of glass *plus* the working strength of steel

For this unusual demonstration, the faces of two steel discs 4" in diameter were glassed, then the discs were put face-to-face and fired at the same high temperature used in manufacturing Pfaudler glassed steel equipment. The bond between glass and steel, created by chemical action during this firing, locked the two pieces together so powerfully that the full weight (11,000 lbs.) of the truck failed to pull them apart. In a subsequent test, this bond withstood a pull of over 19,000 lbs., or 1,500 lbs./sq. in.

High temperature firing locks Pfaudler glass to steel and makes it hard and tough.

Because it can be so durably bonded to steel, glass, with its *almost universal corrosion resistance*, is widely used for both pilot plant operations and full-scale production. Pfaudler glassed steel reactors in capacities up to 3500 gallons are commonplace in chemical processing today. These units are equipped with agitation, can be jacketed, and are supplemented by a complete line of glassed steel accessories. Custom-built reactors as large as 8300 gallons, for severe chemical service, have been constructed. Glassed steel fractionating columns and evaporators have solved many serious corrosion problems.

Even at elevated temperatures and pressures, Pfaudler glassed steel is resistant to all acids except hydrofluoric. And now, with a new Pfaudler glass, it is possible to handle not only acids but also *alkaline* solutions up to pH 12 and up to 212°F. Thus it is possible to perform a wide variety of reactions in a single glassed steel vessel.

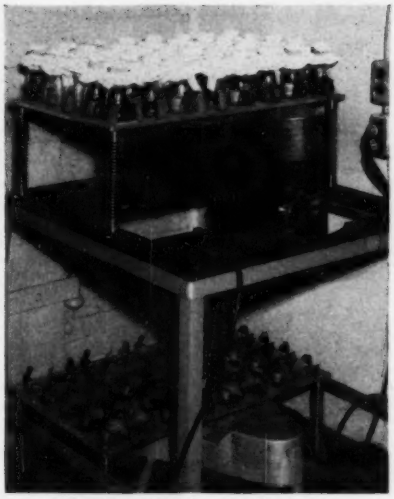
Whenever you have an equipment problem requiring *corrosion resistance, durability, and versatility*, as well as the *economy* which these features provide, look to Pfaudler glassed steel for the solution. Write for our new general catalog today.

CLOSE-UP showing how the glassed steel discs were connected to crane so as to support entire weight of 5½-ton truck. Below: close-up showing steel discs "glassed" together.

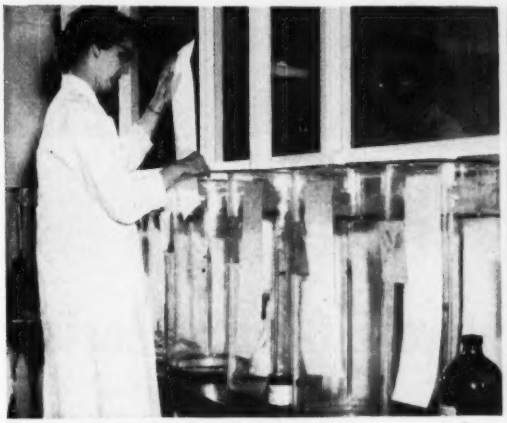
PFAUDLER THE PFAUDLER CO., ROCHESTER 3, N. Y.

Engineers and fabricators of corrosion resistant process equipment since 1884

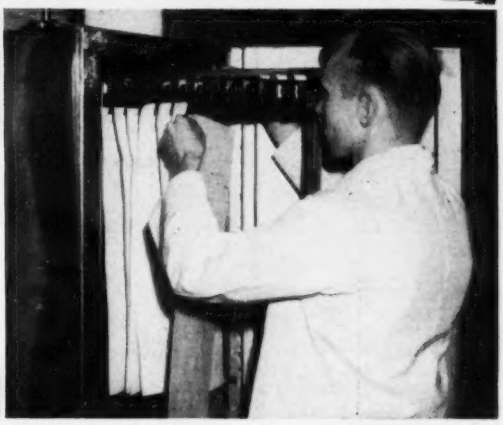
1 SCREENING OF MICROORGANISMS started development of Upjohn process. Researcher transfers cultures to sterile flasks.



2 CULTURES ARE INCUBATED with steroids in flasks on laboratory shaking apparatus.



3 PAPER CHROMATOGRAPHY is used to survey products of microorganisms' action on steroid starting materials.



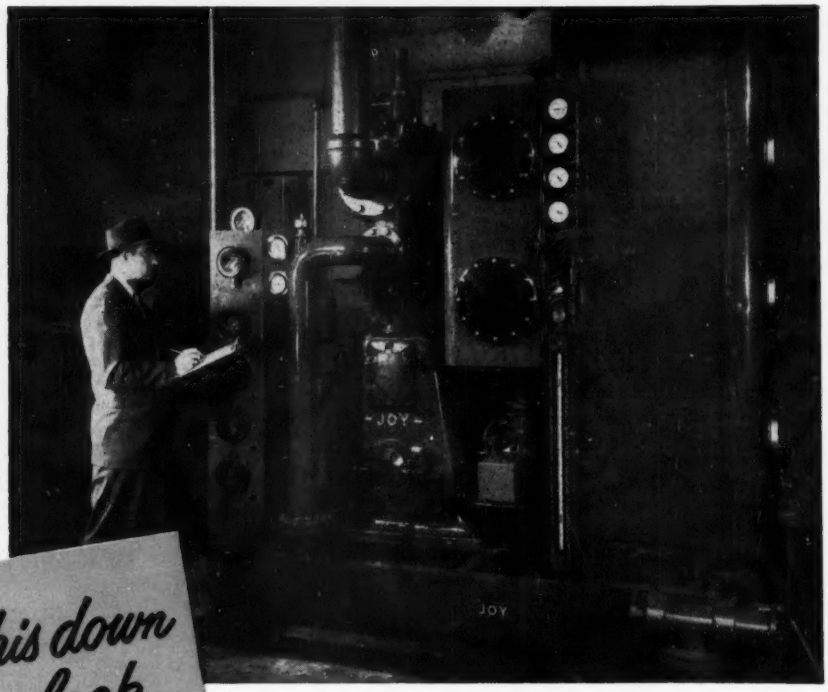
4 CHROMATOGRAMS, after removal from fermentation solution, are dried in oven prior to examination.

Cortisone Quest: The Right Process Bug

Getting the bugs out, the traditional working credo of the process engineering fraternity, is being turned topsy-turvy by cortisone researchers. The cortisone people are putting the bugs in on purpose—with gratifying results. Their bugs, however, are microorganisms—molds to be exact—which play an indispensible role in the latest cortisone process advance. Upjohn Co.'s recently unveiled (*CW, April 19*) fermentation process spearheaded the microbiological attack on cortisone. Now, from Mexico, comes the news of a closely related process developed by Syntex, S.A.

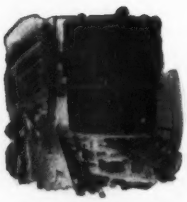
Both the Upjohn and Syntex processes make short work of the classic 11-keto problem. The difficulty of inserting an oxygen atom in the 11-position (of the steroid nucleus) was

5 ULTRAVIOLET SCANNER aids appraisal of chromatograms. Fluorescent spots are read by technician, represent various steroid fermentation products.



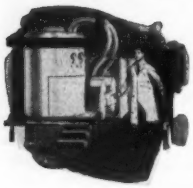
Mark this down in your book...

This GENERATOR can save up to 50% of your OXYGEN costs



For Metal Production and Fabricating

For Glass Welding and Sealing, etc.



For Chemical Processing, etc.

W&D 1-4213

FIRST UNIT OF ITS KIND—A PIONEER

The JOY Oxygen Generator was designed to supply commercial users of oxygen at actual savings up to 50%. It is an *exclusive* Joy development. The Model OX-20, illustrated, is rated to deliver 2000 cu. ft. per hour (about 2 tons per day). The complete line will include units ranging from ½ to 12 tons capacity daily of oxygen at 99.5+% purity.

OWN YOUR OWN OXYGEN PLANT

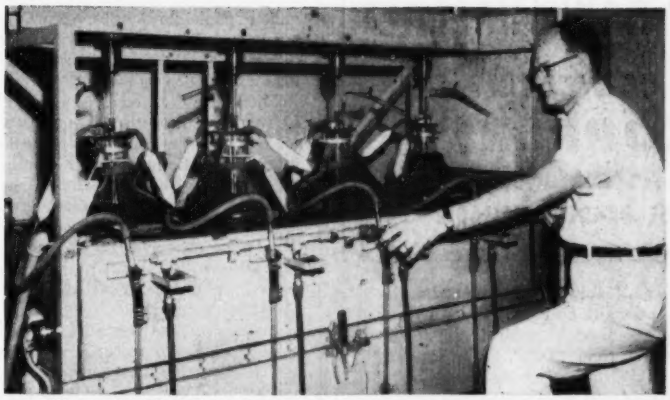
All the advantages of the Joy Generator become *yours.* It is simple to start and operate, can be easily handled by ordinary plant equipment personnel and is completely automatic in operation, requiring only occasional inspection and purity checks. What's more, the unit is *inherently safe*—along with a top operating pressure of only 185 psi, it has pop safety valves and an automatic shut-off system.

NO MESSY CHEMICALS

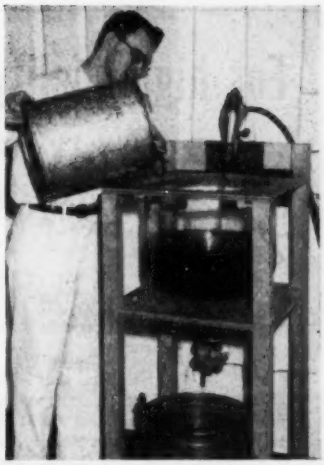
Joy "OX" machines are readily adaptable to single or multiple installations; and for feeding plant supply lines, filling cylinders, or both. The only raw material used is *air,* and the units are self-cleaning . . . no messy chemicals to supply, no residue to remove. ● Write us your oxygen requirements . . . *Joy Manufacturing Company, Oliver Bldg., Pittsburgh, 22, Pa.*

JOY

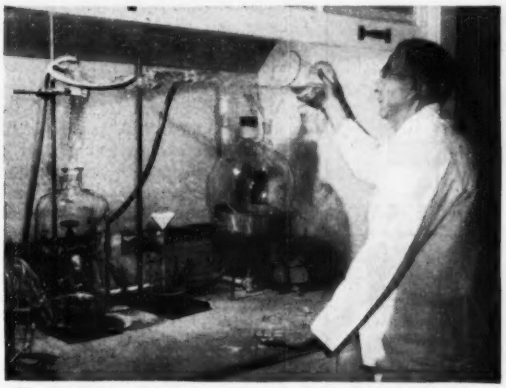
SPECIALISTS IN THE COMPRESSION AND MOVEMENT OF AIR AND GASES SINCE 1885



6 ON A LARGER SCALE, fermentation with promising microorganism is carried out in five-gallon bottles to yield enough conversion material for crystallization.

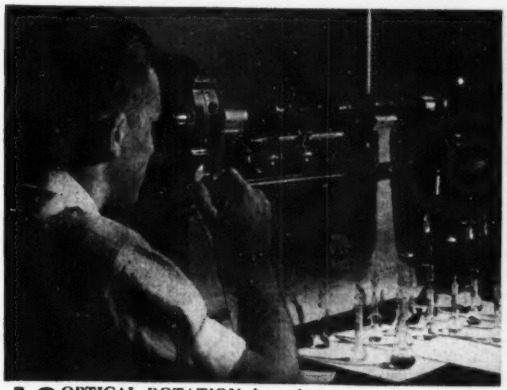


7 BEER from five-gallon fermentation is next concentrated and extracted.



8 DISTILLATION is method of choice for further concentration of beer from five-gallon experimental fermentation.

9 BANKS OF DRYING TUBES contain crystalline steroid fermentation product prior to characterization.



10 OPTICAL ROTATION, by polarimetry, aids recognition of steroid as possible cortisone intermediate.

11 THE PAY-OFF. Packaging of Upjohn cortisone attests to success of quest for the right process bug.

long the chief obstacle to the practical synthesis of cortisone from relatively abundant steroid substances. Chemical methods of doing the job have been devised, are already in commercial practice. But fermentation techniques accomplish in a single step what originally took 37 chemical steps and still calls for almost 20. Upjohn feeds progesterone to its accommodating mold, recovers the 11-oxygenated product.

Safely through its shakedown run, the Upjohn process is rapidly outgrowing its original quarters. First commer-

For high-quality NAPHTHALENE

YOU CAN COUNT ON

KOPPERS

...REFINED AND CRUDE GRADES AVAILABLE

For Industrial Uses, Koppers makes refined naphthalene that is exceptionally pure and is excellent for all syntheses of its derivatives. It is produced in crushed, chipped or flake form—with melting point not less than 79.6°C. Shipments are made from our plant at Kearny, N. J.

Koppers Crude Naphthalene is also produced in three standard grades; the melting points are 74°C., 76°C., and 78°C., respectively.

Crude naphthalene is produced at:
Chicago, Illinois · Carrollville, Wisconsin
Woodward, Alabama · Follansbee, West Virginia

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KOPPERS COMPANY, INC.
Tar Products Division
Pittsburgh 19, Pa.

KOPPERS Coal Chemicals

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This business paper is a member of the Associated Business Publications. It's a *paid*-circulation paper . . . which means the editors must keep their magazines well sold, well read. They meet other editors in clinics, conferences and courses . . . working to make a good paper a better paper, to serve you in more ways. Your business paper is worth every minute you spend with it!

CHEMICAL WEEK

One of a series of advertisements prepared by THE ASSOCIATED BUSINESS PUBLICATIONS

cial batches were turned out in 5,000-gallon penicillin kettles. Now, the company is installing an open-air farm of insulated 20,000-gallon kettles in a field adjacent to its plant.

Microbiological conversion, as the answer to the cortisone puzzle, was no bolt from the blue. Before turning in that direction Upjohn researchers intensively explored total synthesis, chemical conversion of materials like ergosterol and the bile acids, and metabolic conversion of various steroids. None of these avenues appeared as promising as the microbiological approach.

Aware of the continuing, high-priority cortisone research of Merck & Co., Schering Corp., Syntex S.A. and others, Upjohn launched a night-and-day exploratory program. Assistant research director Harold Kolloff, strongly backed by president Donald Gilmore and aided by David Weisblat and Robert Levin, master-minded this phase of the work.

The first big job was to find the right microorganism to do the fermenting—no mean task in view of the vast field to choose from. And to complicate matters, the old methods of assaying fermentation yield were considered too slow for the fast-moving program. A paper-chromatography technique, devised with the aid of University of Rochester's Alejandro Zaffaroni, solved this problem. The chromatographic assaying method proved fast, accurate and showed just how close to "hits" the misses were.

The bug which finally did the trick —a mold of the genus Rhizopus (of the Mucoraceae family, of order Mucorales)—was found in a petri dish which had been set beside an open window to collect such specimens. This microorganism accomplished for the first time, says Upjohn, the microbiological synthesis of a major part of the cortisone molecule—it put the oxygen in the all-important 11-position.

Although details have not yet been published on the final synthesis it probably works something like this: The mold, together with progesterone, is allowed to react for 24-48 hours in a lactalbumin digest-dextrose-corn-steep medium. The beer is extracted with methylene chloride which removes dihydroxyprogesterone and its acetate. Then alumina chromatography of the mother liquor yields monohydroprogesterone, which is oxidized with chromic anhydride to 11-keto-progesterone.

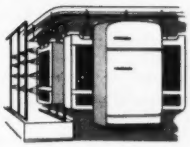
From this point on Upjohn is particularly cryptic, but the process could be concluded as follows: Hydroxylation of the 11-keto derivative at the 17-position, by conversion to the enol

VERSATILE VICTOR CHEMICALS

Victor Take-Hold® . . . food for transplanting . . . promotes faster growth, greater yield.

PHOSPHORUS, PHOSPHATES, FORMATES, AND OXALATES OFFER ENDLESS POSSIBILITIES FOR PRODUCT IMPROVEMENT

Victor Sodium phosphates for soap and synthetic detergents, water softening, conditioning clays, manufacturing foods.



Victor Phosphoric Acid for metal cleaning. Effective rust preventive; provides better adhesion between paint and metal.

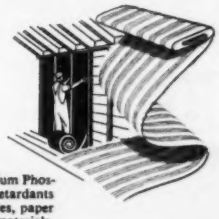
Do you have a product problem? If so, it will pay you to consider the application of versatile Victor Chemicals.

For over 54 years, Victor phosphorus compounds, phosphates, formates, and oxalates have been helping industry produce better products, more efficiently, and more economically. The unusual properties of these versatile chemicals may suggest ways and means of improving your products or process.

Why not acquaint yourself with the opportunities offered by versatile Victor Chemicals? Write today for informative booklet which describes Victor Chemicals and their many uses. Our *Laboratories* and *Product Problem Clinic* are at your disposal. We shall be pleased to work with you. Victor Chemical Works, 141 W. Jackson Blvd., Chicago 4, Ill.

Victor Protan® Sodium Formate cuts tanning time and improves finished products.

Victor Calcium Phosphates for mineral enrichment, leavening agents and conditioners.



Victor Ammonium Phosphates . . . fire retardants for wood, textiles, paper and insulating materials.

Chicago Heights, Illinois

Mt. Pleasant, Tennessee

Victor, Florida

Nashville, Tennessee

Morrisville, Pennsylvania

Silver Bow, Montana

A. R. Maas Division South Gate, California

Prompt relief from packaging problems

More and more manufacturers are recognizing the merchandising magic of a package that is quick to stop the eye . . . because that's when sales are made. H & D Merchandising Boxes are proving most effective in prompting purchases through eye-catching display. For example: this colorful display box for Mintglo not only provides product protection, but sets up easily, supplies excellent trade-mark identification, makes it sales point effectively, and shows off the product to best advantage.

Whatever your product, whatever your packaging problem . . . the H & D Package Laboratory is at your service to provide a practical, economical solution. For the complete story on easier packing, better product protection, freight savings, "show boxing" display, write for the 14-volume "Little Packaging Library." Hinde & Dauch, 5209 Decatur St., Sandusky, O.

H&D®

HINDE & DAUCH

Authority on Packaging

Akron, Baltimore, Battle Creek, Mich., Bloomington, Ill., Buffalo, Chicago, Cincinnati, Cleveland, Columbus, Denver, Detroit, Fairfield, Conn., Findlay, Ohio, Gloucester City, N. J., Greensboro, N. C., Hoboken, Indianapolis, Jamestown, N. Y., Kansas City, Lenoir, N. C., Minneapolis, Omaha, Plymouth, Ind., Reading, Pa., Richmond, Va., Roanoke, Va., Rochester, Sandusky, Ohio, Shrewsbury, Mass., St. Louis, Toledo, Watertown, Mass.

acetate, treatment with perbenzoic acid, followed by saponification, will give the 17-alpha diol. Bromination in chloroform and subsequent treatment of the 21-bromo derivative will yield cortisone acetate.

Hot DDT In Action

Just-released results of a combined Oregon State College-U.S. Department of Agriculture project underscore the growing importance of tracer materials as weapons of insecticide research. Radioactive DDT was used in a study of the compound's insecticidal effects.

Object of the work was to find, if possible, more effective ways of putting the insecticide to work against mosquitoes. Verifying previously indicated facts about DDT's workings was an important corollary aim.

Although conclusions arrived at aren't essentially new or startling, they provide solid substantiation of a number of workaday assumptions in the field. Here's what the researchers found:

- DDT is far more effective against the mosquito larva than the pupa; eleven times more insecticide was needed to kill the latter than the former.
- Mosquitoes from areas which had frequently been subjected to DDT spraying, unquestionably developed resistance to the insecticide. Resistant larvae were found to absorb more than six times as much radioactive DDT as the non-resistant group; yet 20% fewer of the resistant breed succumbed. Even when light doses were administered, resistant larvae absorbed twice as much DDT as their less hardy fellows—but with only an 11% mortality compared to 100% for non-resistant insects.

In large measure the radioactive DDT project served to verify what the researchers had suspected, or tacitly assumed, for a long time. It's worthy of distinction, however, as an uncommon quantitative approach to the whole field of insecticidal mechanisms.

•

Planned Push: Here are the latest figures on East Germany's stepped-up chemical research drive. The Communist zone's "planning commission" has earmarked 2 million DM (East Zone currency) for new plastics development, 4 million DM for synthetic fibers investigations and 1 million for miscellaneous research activity. An additional 20 million DM has been appropriated for support of chemical research and development in all fields for the coming year.

Where industry has the "need" Oronite Chemicals supply the way

ORONITE CHEMICAL COMPANY

THE NAME TO WATCH IN CHEMICALS

WHEN industry needs a chemical which is not available in quantity, Oronite's specialty is finding efficient and economical ways to mass-produce it —meeting the most rigid standards of purity, uniformity and dependability.

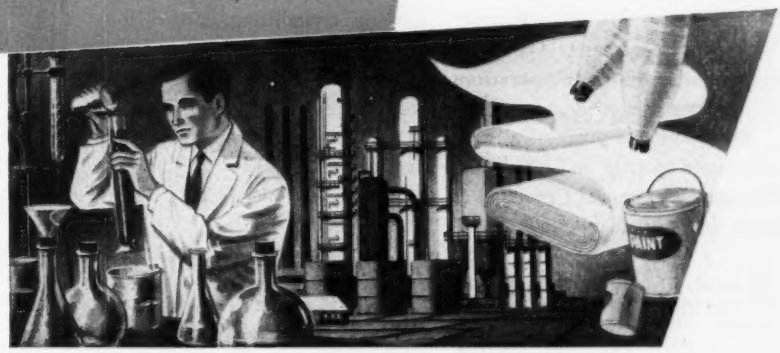
An example is pure Xylene Isomers. Oronite's Para-Xylene is a basic chemical in the new Polyester fibers. Oronite's Ortho-Xylene is used in the manufacture of Phthalic Anhydride—an important product in many better protective coatings. Meta-Xylene is in the pilot-plant stage at Oronite.

Perhaps our present list of chemicals includes one that will improve your product or process. Possibly we can put a chemical you need in mass production. A letter or telephone call will place our experience and facilities at your service.

Most
ORONITE PRODUCTS
are available now—
some are in short supply
Please inquire!

A partial list of
ORONITE PRODUCTS

Detergent Alkane
Detergent Slurry
Detergent D-40
Detergent D-60
Wetting Agents
Lubricating Oil Additives
Cresylic Acids
Gas Odorants
Sodium Sulfonates
Purified Sulfonate
Naphthenic Acids
Phthalic Anhydride
Ortho-Xylene
Para-Xylene
Xylol
Aliphatic Acid
Hydroformer Catalyst

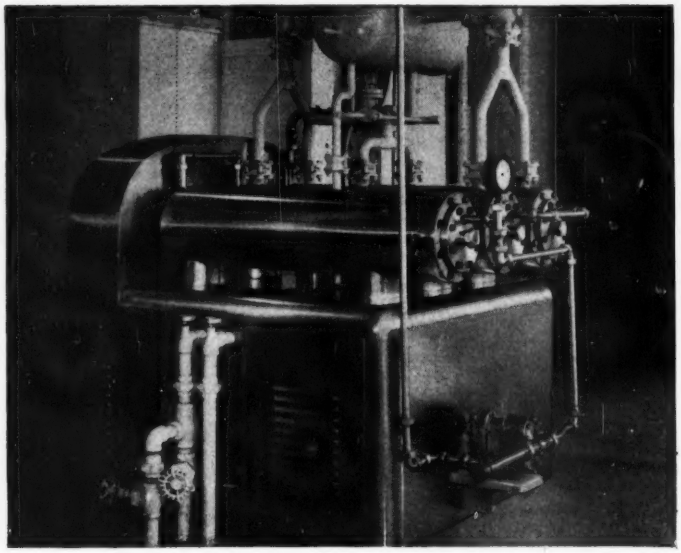


ORONITE CHEMICAL COMPANY

38 SANSOME ST., SAN FRANCISCO 4, CALIF. STANDARD OIL BLDG., LOS ANGELES 15, CALIF.
30 ROCKEFELLER PLAZA, NEW YORK 20, N.Y. 600 S. MICHIGAN AVENUE, CHICAGO 5, ILL.
MERCANTILE SECURITIES BLDG., DALLAS 1, TEXAS

2340

Girdler Process News



Norwich Pharmacal eliminates long vat-cooling with VOTATOR* Heat-transfer Apparatus

LIQUID and ointment products of The Norwich Pharmacal Company were formerly cooled and aged in large vats—for periods of days or weeks. Now continuous, closed-system processing with VOTATOR Heat-transfer Apparatus accomplishes the same operation in a matter of seconds.

This efficient processing has eliminated spoilage and saved The Norwich Pharmacal Company a great deal of valuable floor space. Automatic control assures complete uniformity of product and permits rigid quality control.

VOTATOR Heat-transfer Apparatus is widely used for cooling, heating, crystallizing, controlling heat of reaction, and many other processes. Girdler's complete service includes process engineering and design, manufacture of equipment, and installation. Call on Girdler in the planning stages of your processing facilities.

*VOTATOR—T. M. Reg. U. S. Pat. Off.

The GIRDLER Corporation

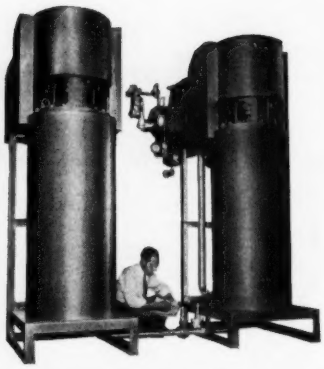
LOUISVILLE 1, KENTUCKY

Votator Division

VOTATOR DIVISION: *Processing Apparatus for the Food and Chemical Industries*

GAS PROCESSES DIVISION: *Designers, Engineers and Constructors for the Petroleum and Chemical Industries*

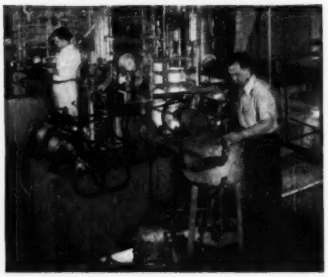
THERMEX DIVISION: *Industrial High Frequency Dielectric Heating Apparatus*



Improves Reaction Efficiency

Used as a continuous mixer and chemical reaction vessel, VOTATOR Heat-transfer Apparatus offers many advantages:

- reactants can be injected at multiple points and gases introduced continuously.
- a mixture of reactants can be maintained and heat of reaction closely controlled.
- reaction temperatures are achieved quickly, eliminating side reactions.
- viscous liquids can be handled easily, and reacted product extruded.
- hazardous chemicals can be processed safely.



Process Research

Girdler's pilot plant and laboratory facilities are available for the development of new processes and equipment, and research on new applications. Let Girdler help with your process problems.

Want Information?

Girdler's Votator Division designs and erects complete plants for processing edible oil, food, and many other products; and supplies heat-transfer equipment for continuous processing of liquid and viscous materials. Write for Bulletin V-48. The Girdler Corporation, Votator Division, Louisville 1, Kentucky. District Offices: New York, Atlanta, Chicago, San Francisco.

New Motive for a Change

The revolution on rails—the change from steam to diesel locomotives—has vastly altered the chemical needs of the railroad companies.

Demand for cleaning compounds and oxidation inhibitors has jumped. But it doesn't match the decline in the need for boiler-water softeners.

Though boiler supplies will be a major market for at least five years, railroad chemical suppliers have begun to switch, are readying inventories for inevitable complete dieselization.

You see it daily: The New York Central completes dieselization of its Rochester division, or the Rock Island retires its last steam engine from suburban service.

Already more than 16,000 diesel-electric engines are doing more than half the nation's rail hauling, and the trend toward complete dieselization will soon have run its course. Many major lines are completely dieselized now, and most of the remaining ones are in the process of change.

With this vast change in basic railroading has come a greatly altered market for chemical specialties. It takes the form of a steeply sagging demand for water-softening compounds, long the major chemical purchase items of America's railroads.

Diesel Switchers: Where a key Western line once required 1½ million pounds of soda ash per year, after dieselization, its requirements for soda ash are almost nothing. A big Eastern line, now over 54% changed to oil locomotives, estimates its demand for soda ash (once 5,000 tons per year) is more than halved, sees further decline as certain.

But if the boiler treating chemicals market has dropped, need for other chemicals has been hiked. Demand for detergents has climbed. Railroads are a lot more cleanliness conscious now; roads aware of the visual appeal of a gleaming train scrub engines and cars often.

One line estimates it lays out $½ million now for detergents to keep its trains sparkling: mild alkaline cleaners for the powerful engines; slightly acidic cleaners for the big scrubbers that automatically wash train exteriors.

Roundhouse Revisions: As the roundhouses are razed, and the fire rakes junked, chemical suppliers have broadened their interests. More diesel electrics mean more batteries, which require chemicals for upkeep, and more need for corrosion inhibitors for the heavy diesel radiators. And a profitable sideline has been chemical weed killers for clearing rights-of-way.

These changes in the kinds of chemicals railroads buy have brought in new sales competition. Dearborn Chemical Co., National Aluminate Corp., E. F. Drew, Marathon Corp. and others have long been the leaders in railroad supplies. Now they have rivals in distributors of cleaning compounds. Not only is the U.S. market in contention, but the Mexican also—Mexico's railways are now 40% dieselized.

Steam engines are far from completely out, however. The heavy investment in wayside water-treating stations, among other things, has made some lines reluctant to switch.

Wayside stations, many built less than a quarter century ago, still consume considerable quantities of boiler treating chemicals, and will require large amounts for several years to come. Chemicals in most demand are soda ash, hydrated lime, sodium aluminate, salt, tannin, copper sulfate, and anti-foaming agents. There's a need too for lye and phosphates, used for cleaning boilers.

Oversize Facilities: On the other hand, railroads changing over to diesels try to utilize their wayside stations for treating the water used in the heating boilers of diesels. But these flash boilers require only about ⅛ the water steamers take. And to treat this water, some lines have installed resin demineralizers at their stations.

In addition, sodium and potassium chromates and dichromates are employed in the coolant water for the diesel radiators. However, the wayside stations are larger than they need be for diesel's reduced needs, and some of the locomotives are equipped with small briquet-type softeners. Moreover, where steamers require facilities about every 150 miles, diesels make runs of 400 miles between servicings.

Service Angle: Addition of diesel locomotives to the rails has occurred in the past 20 years. The shape of things to come could be seen by 1934, when the first streamliners, diesel powered, were put into service. At that time, the Electromotive Division of General Motors (now doing half the D-E manufacture) had to set up its own special department to handle the problems of engine rust and corrosion that the new engines posed.

During the war, the change to diesels on freight lines was begun. Railroad supply houses, seeing the trend, broadened their lines to offer diesel chemicals. As they stepped in, diesel locomotive builders saw little

DIESEL AND STEAM: A change in demand as the Iron Horse retires.

point in continuing special water treatment departments, and have since abolished them.

The speed with which the change to diesels has been made in the past seven years can be shown easily: In 1946, there were 37,551 steam engines in service, 4,441 diesels; by '51, only 21,575 steamers, and 16,543 diesels. And the trend toward motorized locomotives continues: This year, Southern Pacific has 122 locomotives on order; Chicago and Northwestern, 57; Burlington, 21; New York Central, 42; to name a few roads only.

That means that the chemicals suppliers must prepare for the time when the demand for boiler chemicals is gone. They must not go the way other railroad-dependent firms have. The outfits that built the wayside water stations haven't put one up since 1935; many steam locomotive firebox companies have gone out of business.

There will continue to be a growing market for the diesel fostered chemicals, and even if there is a slow change to coal- or oil-burning turbine engines, it seems unlikely that there will be a shift back to the heavy boiler-water compounds. Oil companies have found dieselization profitable (better than 2½ billion gallons of fuel oil were used last year); chemical suppliers can hope for an expanding market too.

Permanent Hairpulling

A rippet seems to be developing among makers of home wave kits. Recently Richard Hudnut began heavy advertising of "dangers" of using non-neutralizer home permanents. Now Prom (div. Gillette Co.) has filed legal action with the Federal Trade Commission on the "disparaging and untrue" ads.

Run for the second time last week, the full-page Hudnut (div. Warner-Hudnut) ads, headed by "You'll feel like crying . . . but crying won't help!" feature a mournful, frizzle-haired model sponging away a tear. Coming right to the point, the ad goes on to say: "This message is . . . to warn you before it is too late, that when you give yourself one of those so-called short-cut, non-neutralizer home permanents, you're gambling with the health and beauty of your hair."

The same day the ads first appeared, Prom filed its action. Joseph T. Lewis, Prom manager, pointed out that last month was the biggest in his company's history, states: "We know that women have used the product with complete satisfaction . . . many already two or three times."

Home wave kits, with neutralizers or without, are based on thioglycollic acid compounds; the acid softens the hair for curling, is then ordinarily neutralized with potassium bromate, sodium perborate, or (at most beauty salons) hydrogen peroxide. Non-neutralizer types depend upon the air to oxidize and neutralize the thioglycollates.

Both types of home kits are on the market, although in recent months the trend has been toward the non-neutralizer sort. The ad-debate over them is not new, but has never before approached the current "no holds barred" pitch. Whether the current campaign will do more than baffle the potential user is problematical.

Ag Chemical Confab

The 19th annual meeting of the National Agricultural Chemicals Association is planned for September 3, 4, and 5 at Spring Lake, N.J. Features:

- Discussion of the medical problems in airplane dusting and spraying.
- New ways to boost the food output for our increasing population.
- Talks on pesticides requirements for 1952-53.
- Lectures on agriculture and technological improvements.
- Reviews and papers of U.S. Bureau of Entomology and Plant Quarantine, and the problem of insecticide residues.

•

Continental Contributions: A foam rubber inking pad has been introduced by N. V. H. van Gimborn of Zevenaar (Netherlands). Touted advantages: Holds more (25%) ink than felts, doesn't fray, adapts itself better to shape of stamp.

- Another Dutch development is a new fountain pen ink, made by Kon. Fabrieken Talens & Zoon N. V. of Apeldorn. It is said to be non-clogging and non-corrosive, and to flow easily.
- A new carton coming out of Cartonfabriek J. W. Schut N. V. of Loenen is coated with a thin, odorless water repellent. A waterproof adhesive tape is available to make water-tight package.
- Non-shrinking, non-felting knitting wool is now being produced by N. V. Kunst Textile Industrie "KATI" of Enschede. Treatment involves predying processing with dilute copper sulfate, followed by hydrogen peroxide.

•

Grass Anchor: Iron Mountain Adhesives Co. (Cleveland, Ohio) is now selling a new product designed to hold grass seed in place on slopes

Localized Testing

A CALIFORNIA FARM is the location of Du Pont's Far West field testing station. To insure the nationwide effectiveness of the company's agricultural chemicals and insecticides, the chemicals are tested under regional conditions on the 15-acre property in the Santa Clara Valley. Millard Swingle (right) heads the "proving ground"; he's shown here discussing orchard cover crop discing with his foreman, Nick Lazaneo.

Hooker Chemical Guide
(ONE OF A SERIES)

USE this handy reference to save time in selecting high quality chemicals.

HOOKER TOLUENE DERIVATIVES

BENZYL CHLORIDE

Synonym: Alphachlorotoluene
Formula: $C_6H_5CH_2Cl$
Appearance: Clear, colorless to light yellow liquid.

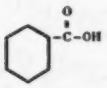
TYPICAL PROPERTIES

Molecular Weight	126.5
Freezing Point	−43° C
Distillation Range (Refined) 5° or less incl.	179.4° C
Distillation Range (Tech.) ... 6° to 10° incl.	179.4° C
Specific Gravity (Refined), 15.5°/15.5° C	1.107
Specific Gravity (Tech.), 15.5°/15.5° C	1.106

USES

Intermediate: Chemicals, dyestuffs, rubber accelerators, gasoline gum inhibitors, perfume bases, plasticizers, resins, wetting agents, pharmaceuticals.

BENZOIC ACID



Synonym: Phenylformic Acid
Formula: C_6H_5COOH
Appearance: White, odorless, crystalline solid. USP grade in powdered form; Technical grade in powdered or bead form.

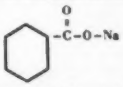
TYPICAL PROPERTIES, USP GRADE

Molecular Weight	122.1
Melting Point	122.0° C
Benzoic Acid	99.3% Min.
Water	0.2% Max.

USES

Intermediate: Dyes, pharmaceuticals, perfumes.
Textile: Dyeing assistant, dye stripping agent, preservative for sizing.
Preservative: Foods, cosmetic creams, lotions, tobacco.

SODIUM BENZOATE



Synonym: Benzoate of Soda
Formula: C_6H_5COONa
Appearance: White, odorless, crystalline solid in flake or powdered form. Available in USP or Technical grades.

TYPICAL PROPERTIES, USP GRADE

Molecular Weight	144.1
Sodium Benzoate	99+%
Benzoic Acid	0.2% Max.
Water	0.5% Max.

USES

Preservative: For foods such as tomatoes, fruit juices, syrups, margarine; also preservative for pharmaceutical and cosmetic preparations, tooth paste.
Corrosion Inhibitor: For glycol anti-freeze solutions, chlorinated solvent type metal cleaners, etc.
Chemical Intermediate: Dyestuffs and pharmaceuticals.

BENZOYL CHLORIDE

Formula: C_6H_5COCl
Appearance: Clear, colorless liquid.

TYPICAL PROPERTIES

Molecular Weight	140.5
Freezing Point	−0.9° C
Boiling Point	198° C
Specific Gravity, 15.5°/15.5° C	1.219

USES

Chemical Intermediate: Introduce benzoyl group into organic compounds.
End Products: Benzoyl peroxide, benzophenone and benzyl benzoate.
Derivatives: Include polymerization catalysts, bleaching agents, perfumes, dyes and pharmaceuticals.

BENZOTRICHLORIDE

Synonyms: Alphatrichlorotoluene
Phenyl Chloroform
Formula: $C_6H_5CCl_3$
Appearance: Clear, colorless liquid.

TYPICAL PROPERTIES

Molecular Weight	195.5
Freezing Point	−5° C
Distillation Range	219° to 223° C
Specific Gravity, 15.5°/15.5° C	1.380

USES

Intermediate: Chemicals and dyestuffs.

MONOCHLOROTOLUENE

Synonym: Methylchlorobenzene
Formula: $CH_3C_6H_4Cl$
Appearance: Clear, colorless to straw colored liquid.

TYPICAL PROPERTIES

Molecular Weight	126.5
Freezing Point	below −45° C
Distillation Range	158.3° to 161.7° C
Specific Gravity, 15.5°/15.5° C	1.080

USES

Solvent: Rubber and synthetic resins.
Intermediate: Manufacture of rubber accelerators, chemicals.

For more information on items listed, drop a note on your letterhead to HOOKER ELECTROCHEMICAL COMPANY, 3 Forty-Seventh St., Niagara Falls, N. Y.

HOOKER ELECTROCHEMICAL COMPANY

NIAGARA FALLS, N. Y. • TACOMA, WASH. • WILMINGTON, CALIF.

From the Salt of the Earth

HOOKER CHEMICALS

2-558

SLY PIONEERS & LEADERS in INDUSTRIAL DUST CONTROL

Do you make any of these products?

DUST COLLECTION IS CUTTING THEIR PRODUCTION COST

Atomic Energy Program	Stock & Poultry Feed (7)
Aero-Marine Engines	Fertilizer
Diesel Locomotives	Food from Soya Beans
Marine Diesels	Alfalfa
Spark Plugs	Grain Foods
Carbon Black (tires)	Baked Foods
Rubber (3)	Agricultural Insecticides (3)
Synthetic Cork & Rubber	Dairy Cleansers
Alloy for Steel	Cement
Strip Mill (sheets)	Building Board (2)
Metal Castings (5)	Building Granite (2)
Petroleum Refining (2)	Asphalt Products
Oil Well Reactivators	Thermal Insulation (4)
Carborundum	Sulpha Drugs
Pyrometer Tubes	Pharmaceuticals (5)
Mica Insulation	Textiles
Optical Goods	Paints
Motor Controls.	Printing Ink
Jewel Bearings	Printing
Lead Oxides (3)	Electric Ranges
Storage Batteries	Shipping Containers
Detergents	Clay Products (2)

The above list is *end products* as shown by a canvass of users of 71 consecutive Sly Dust Filter installations, made recently—*not* a handpicked list, just taken in sequence.

Bulletin 98—one of the most helpful booklets on dust collection ever written. Free on request.

Whatever you make, the probabilities are that dust collection can reduce your operating costs. Because of our fifty years' experience, and the advantages of Sly equipment in thorough dust collection and economies of operation, we believe we can save you money.

Why not tell us your dust problem and find out what we can suggest?

THE W. W. SLY MANUFACTURING CO.
4770 TRAIN AVENUE • CLEVELAND 2, OHIO
BRANCHES IN:
NEW YORK • CHICAGO • PHILADELPHIA • SYRACUSE • DETROIT • BUFFALO
CINCINNATI • ST. LOUIS • MINNEAPOLIS • BIRMINGHAM • LOS ANGELES • TORONTO

SPECIALTIES. . . .

until it can become firmly rooted. Tagged Klep, it is mixed with water, and sprayed over the soil when the seed is planted and rolled. It is said to eventually merge with and fertilize the soil.

•

Thick Coat: Nu-Pon A is a newly developed, resin-base coating for exterior metal finishing produced by the Glidden Co. (Cleveland, O.). Said to provide a film about 5 times thicker than most paints (10 mils as compared to one or two), the paint is applied with a special spray gun. The gun employs two feeds, one of the Nu-Pon A, the other of a new catalyst. The two materials are mixed in the air, and the resultant paint starts to cure as it strikes the surface.

The resin base has been used for some time by Glidden for baked-on enamels; it is only with the recent working out of a polymerizing catalyst that the resin has been adaptable for ordinary room temperature drying.

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Paint Fair: Two new alkyd resins for formulation of paints have been introduced by American Cyanamid Co.: Rezyl 406-22 and 874-22. The first is designed for flat finishes, the second for high gloss paints.

•

Rat Killer: Schering A. G., Berlin, has developed a new cumarone-containing rat poison, to be sold under the trade name Actosin. A powder, it can be applied by spray or mixed in food, and causes death by preventing blood coagulation.

•

Bollworm Study: In a recent meeting in Memphis, Tenn., Federal and state insect control experts, members of the National Cotton Council and of the Oscar Johnston Cotton Foundation, outlined a thirty point plan to conquer the pink bollworm.

A $1.5 million five-year research program to eliminate what has been termed cotton's greatest menace was offered.

The spread of pink bollworm, which has moved from Mexico into Texas, thence to Oklahoma, New Mexico, and in some cases, Florida and Georgia, has created the belief that present control measures are inadequate. Study of the worm, tests with various available insecticides, and with types of resistant cotton are planned as projects for the group.

•

Coatings Firm: Ply-On Coatings Inc. has been formed in San Francisco to manufacture and distribute plastic coatings and protective supplies. It is capitalized at $50,000.

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INDUSTRIAL CHEMICALS

tecquinol*

POLYMERIZATION INHIBITOR

PEROXIDE-CATALYZED POLYMERIZATION ARRESTOR

STABILIZER

aldehydes
acrylates
acrylonitrile
vinyls
and other oxidizable materials

REACTION INTERMEDIATE

plus

Carboxylic acids	→	1,4-Acyloxybenzenes
Carboxylic acids	$AlCl_3$ →	2,5-Dihydroxy phenones
Amines	→	N-substituted p-Aminophenols N,N'-substituted p-Phenylenediamines
Formaldehyde	→	Heat-convertible resins
Benzaldehyde	→	Tetrahydroxy triphenyl methane
Olefins	→	2,5-Dialkyl hydroquinones
Phthalic anhydride	→	Quinizarin

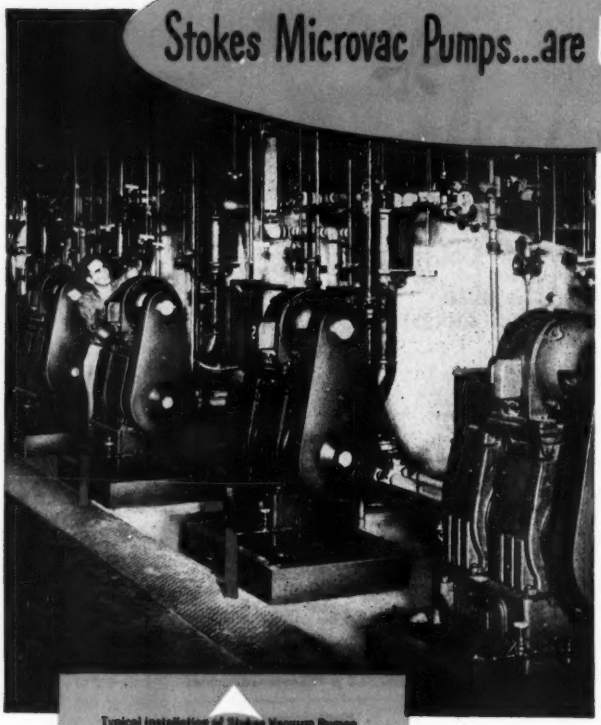
* EASTMAN technical hydroquinone

We will be pleased to send sample quantities of Tecquinol for your evaluation. Write to Tennessee Eastman Company, Chemical Sales Division, Kingsport, Tennessee.

SALES REPRESENTATIVES: New York—260 Madison Ave.; Framingham, Mass.—7 Hollis St.; Cleveland—Terminal Tower Bldg.; Chicago—360 N. Michigan Ave.; St. Louis—Continental Bldg.; Houston—412 Main St. **West Coast:** Wilson Meyer Co., San Francisco—333 Montgomery St.; Los Angeles—4800 District Blvd.; Portland—520 S. W. Sixth Ave.; Seattle—821 Second Ave.

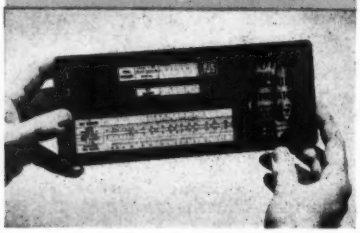
TENNESSEE EASTMAN COMPANY, *Division of Eastman Kodak Company,* KINGSPORT, TENNESSEE

Stokes Microvac Pumps...are basic to Vacuum Processing



Typical installation of Stokes Vacuum Pumps.

Send for new Vacuum Calculator for rapid slide-rule calculations. Includes standard ABCD log scale. Also send for Catalog 700, "Stokes Microvac Pumps for High Vacuum" with copious reference material.



High volumetric and mechanical efficiency make these famous pumps economical and reliable units in any vacuum system.

Capacities of Stokes Microvac Pumps run from 15 to 500 cfm... pressures to 10 microns absolute. Power consumption is low and the top-mounted motor contributes to compact design requiring minimum floor space.

Lubrication of the four moving parts (including the exhaust valve of corrosion-resistant Teflon) is fully automatic. There are no stuffing-boxes or grease-fittings, and no packing.

Parts are precision-finished, standard and interchangeable. Freedom from wear assures years of trouble-proof service.

Stokes is the only manufacturer of equipment for complete vacuum systems, including Microvac mechanical pumps, oil diffusion pumps, McLeod Gages and Vacuum Valves.

Consult with Stokes on the application of vacuum to drying, freeze-drying, impregnating, extraction, solvent recovery, evaporating, vacuum metallizing, and to other purposes for which vacuum deserves exploration.

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PRODUCTION . . . . . .

Germany On Stage

For the first time since pre-World War II years, German chemical equipment will be displayed at the annual National Chemical Exposition. At this year's show in the Chicago Coliseum, Sept. 9-13, Chemtech Products Corp. (New York) will display the complete line of porous stones manufactured by Germany's Schumacher'sche Fabrik.

Rising out of the rubble of Allied bombings, 120-year-old Schumacher is again in full gear and bidding for its share of business in the world market. Its stock in trade is a line of porous plates for filtering, diffusing, and similar operations; stone catalyst supports; tower packing; electrolytic cell diaphragms; and related process equipment.

The filters are of three main types: (1) Aerolith (kieselguhr masses), for all acids except hydrofluoric; (2) Silexith (quartz masses), for use where frequent filter change is necessary; and (3) Carbo (carbon masses), recommended for contact with alkaline liquids.

According to Chemtech's president, Martin Bernhardt, some of these stones are currently being evaluated in sewage plants of two of the largest cities in the United States as well as in Canada. They are competitive with their American counterparts.

The New York importer is also handling Andreas Hofer* (West Germany) high-pressure equipment, including pumps, autoclaves, catalytic plants, gas liquefiers, low-pressure gas holders and high pressure fittings.

Of particular interest to high-pressure specialists are the improved Hofer compressor - booster combinations, which can operate at up to 5,000 atmospheres—considerably higher than can be obtained with any American-made unit. These compressors are small and for experimental use only, but already three of the larger U.S. chemical companies are using them. Prices of these machines vary from about $1-$8 thousand, can be obtained in chromium- and other corrosion-resistant steels.

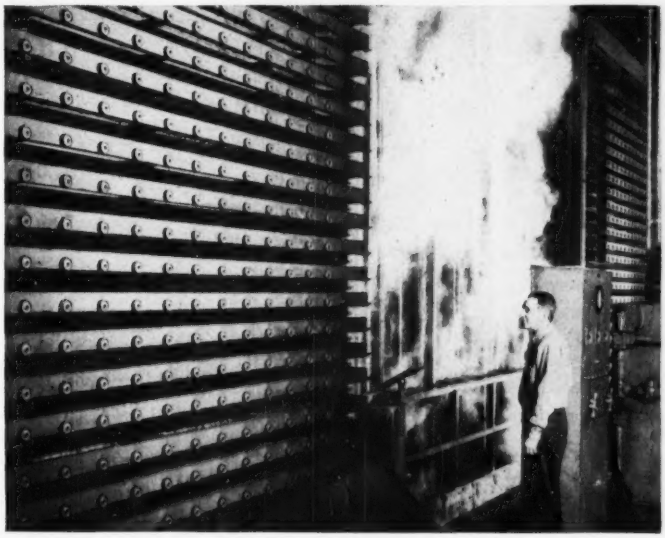
A second new Hofer development which Chemtech boasts about is a completely enclosed autoclave containing a magnetically-operated, reciprocating agitator. Bernhardt points out that this autoclave has capacities up to 27.5 gal. at 350 atmospheres, claims it's the largest of its kind.

The agitator is operated by a single or double solenoid, moves at 30 to 120 double strokes per minute at a three- to six-inch lifting height. For nonviscous, or slightly viscous liquids, a single solenoid at the top and a gravity drop is recommended. For viscous liquids a double solenoid powers both the up- and downstroke to insure continued agitation. Also, internal cooling coils are attached to dissipate reaction heat when necessary.

Since there is no stuffing box, leaks are said to be eliminated and servicing is kept to a minimum. Also, the reactants are not exposed to stuffing box oil and the units accordingly can be used for syntheses involving oxygen.

Upshot of these developments: Not only is German industry bouncing back with renewed vigor, but its inventive genius is again demanding recognition from U.S. competitors.

* Who worked with Germany's well-known Franz Fischer (of Fischer-Tropsch fame) in the latter's early work on high-pressure technique.



Easier Way to Hardboard

OREGON LUMBER CO. is the proud possessor of a new process for turning waste wood into profitable hardboard. Features of the process: It requires almost a third less horsepower than older methods, by-passes a debarking step, uses no chemicals. Developed by A. B. Anderson, formerly with the company's research staff and now with the University of California's forest laboratory, it's being used by Oregon Lumber at a new $2.5 million plant at Dee (Ore.) to turn out 120,000-180,000 sq. ft. daily from waste fir.

EQUIPMENT . . . .

Resistant Cement: The Irvington Varnish and Insulator Co. (Irvington, N. J.) has introduced a new resin for use in chemically resistant cement. Recommended for tank linings or for chemical bricks, the resulting cement is claimed to give higher tensile strength, less shrinkage, improved resistance to oxidizing agents, better stability in water and under heat.

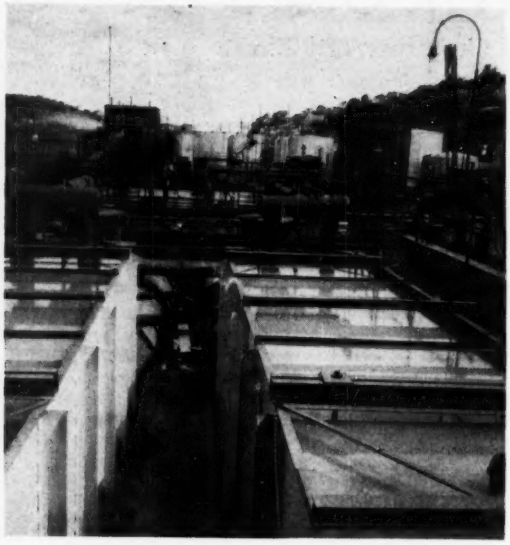
•

New Pump: For moving chemicals at temperatures up to 250 F, the Peerless Pump Division of Food Machinery (Los Angeles) has brought out a new pump utilizing a shaft seal (instead of the usual stuffing box) and a stainless steel alloy for the wetted end. Peerless says the mechanical seal is designed to virtually assure the prevention of leaks along the shaft, results in cost savings both for the pump and the seal. It's available in four sizes with capacities ranging from 10 to 250 gpm., heads from 10 to 140 ft.

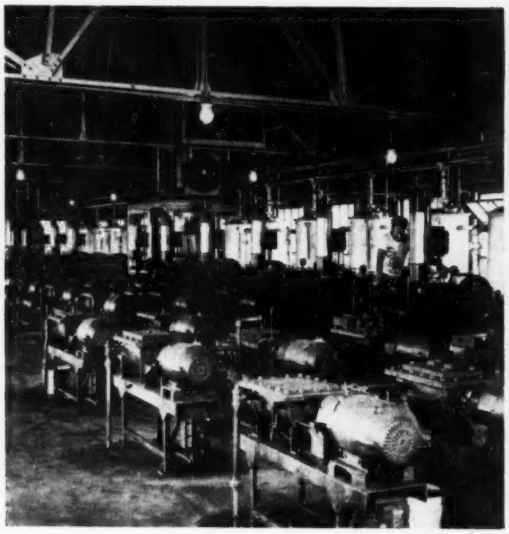
•

Drafting Aid: Labelon Tape Co. (Rochester, N.Y.) is now pushing distribution of its Plant Layout pressure-sensitive tapes designed to save draftsmen's time by eliminating the need for drawing standard symbols. The tapes come in 45 common symbols (standard gauge railroad tracks, aisles, building columns, colored directional arrows, etc.), in a scale of ¼ in. equals 1 ft. By using the tapes, says Labelon, a student draftsman can make a plant layout in ½ to ⅓ the usual time. It points out, too, that corrections can be readily made by simply relocating the strips.

OPERATOR SAMPLES tank car of petroleum sulfonate for analysis before shipping. Processing starts . . .



1 IN THE SULFONATION PLANT, where raw materials are a select fraction of crude oil and sulfuric acid.



2 ACID TREATMENT produces two layers. Sulfuric acid is recovered from the lower layer, and the upper layer . . .

3 IS NEUTRALIZED to form the sodium salt. Later, that can be modified to the calcium, barium or other salt.

Oil-Free and Surface-Active

Latest addition to a fast-growing family is an oil-free petroleum sulfonate now being commercially produced by L. Sonneborn Sons, Inc. of New York City. In a number of the present applications for surface-active sulfonates, there is no incentive for customers to turn to an oil-free product. But Erich Meyer, research director of the company and father of the development, figures that in cases where oil cannot be tolerated, the new products will open doors formerly closed to petroleum sulfonates.

One promising outlet, says Meyer, is as an emulsifier in emulsion polymerizations used to produce synthetic resins and synthetic rubber latices. He thinks they will be particularly useful in the polymerization of butadiene with either styrene or acrylonitrile and vinyls.

Meyer also points out that the oil-free sulfonates can be produced in present commecial facilities with the addition of only one or two extra steps, thus will not entail a significant price

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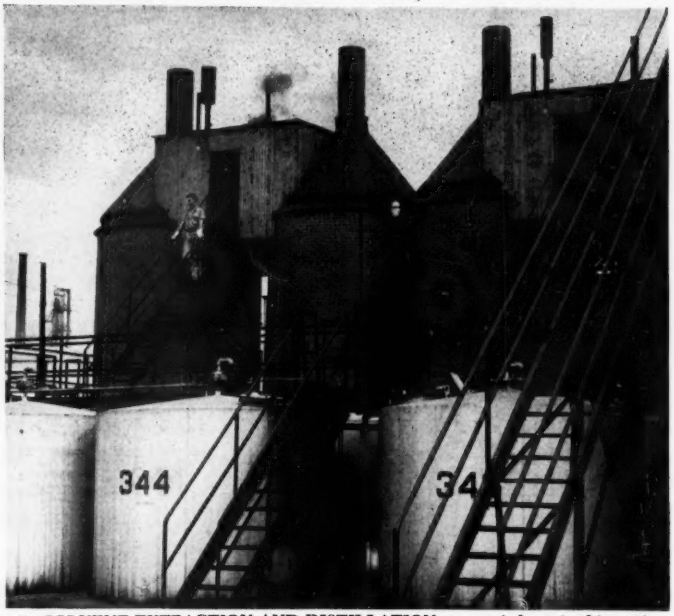


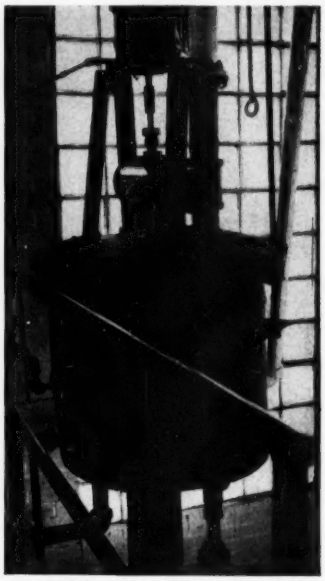
4 SOLVENT EXTRACTION AND DISTILLATION are carried out in this section of the plant. Product here normally contains about 33% oil.

increase for the customer. As a result, he expects they will be preferred over regular sulfonates in some places. In fat splitting, for instance, one of the first commercial applications for petroleum sulfonates, Meyer anticipates a big market for the oil-free products.

Last week, the CW camera visited Sonneborn's Petrolia (Pa.) plant (currently in the middle of a $¾ million expansion program) to see how the oil-free sulfonates are made. Sulfonate processing starts with a drastic sulfonation of a select fraction of crude with concentrated sulfuric acid. Two layers are formed; the upper layer contains the oil-soluble sulfonic acids, the lower layer contains the water-soluble acids. After settling, the lower layer is drawn off for recovery of sulfuric acid. The upper layer is neutralized with caustic to form the sodium petroleum sulfonate. (The end product can be modified to the calcium, barium, magnesium, chromium or other salt by reaction with the suitable metallic chloride.)

When neutralization is complete, the salt is removed by solvent extraction and the solvent distilled off. At this point, the product contains sulfonate (62%), oil (33%) and water (5%).

To produce the oil-free sulfonate, the material is sent through a continuous solvent extraction in a specially designed kettle. (Although the kettle is designated as "pilot" equipment, Meyer reports it can handle a sizable throughput, will be able to take care of demands in the immediate future.) After a distillation step to remove the solvent, the product contains about 50% water, 50% petroleum sulfonate. The product can be sold as is or concentrated further.



5 CLUE to the oil-free sulfonate is a second extraction in this kettle.

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You can rely on Continental's "F" style cans to add sales appeal to any chemical product. They're sturdy, handy to use, and our master lithographers make them things of beauty. Available in practically every size you could want: ½-pint, pint, quart, ½-gallon and gallon. To sew up more sales, ask us for the full story on Continental "F" style cans!

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Facts about ISCO White Goods

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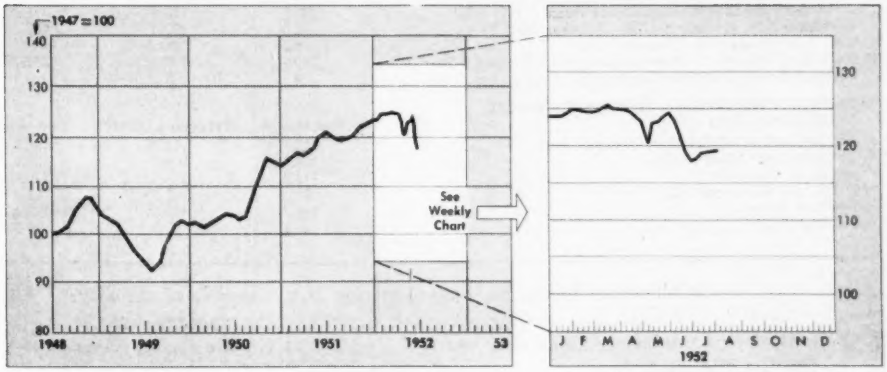

CW Index of Chemical Output—Basis: Total Man Hours Worked in Selected Chemical Industries

MARKET LETTER

Nearly 130 million gallons a day of benzene by 1954 may have seemed like a pretty fair target for the petroleum industry when DPA mapped out its benzene-from-petroleum expansion plans last year. But if the industry completes all the capacity it's talking about, that 130 million goal may be upped by almost another 10 million gallons a day.

However, some experts are saying that a lot of the construction that is expected to turn out close to 140 million gallons of benzene from petroleum is still on paper, will probably remain in a nebulous stage.

Overproduction tends to weaken a chemical market. This axiom, true for most commodities, will never be applied to petrobenzene. The reason: If petroleum benzene prices begin to sag, most producers will switch their equipment to making high octane gasoline, leaving the benzene field to lower-cost coke producers.

There's a wide differential in price between coal and petroleum benzene. The former sells for about 32-37¢/gallon; the latter, 47-55¢. The demand, while still strong, is somewhat easier than it was last year when the petroleum benzene expansion program was initiated. But the demand is strong enough, the difference in price great enough for coal benzene makers to feel they should receive more for their product.

Foreign pulp producers' higher prices may be behind these significant shifts in pulp trends. At mid-year:

- U.S. imports were down 27% from the first six months of 1951—921,000 tons vs. 1,257,000.
- Domestic production for the six months ended June, 1952 totaled 8,364,000 tons—a 1% increase over the like period last year.
- Exports of American-made pulp for first half-year period rose to 129,000 tons in 1952 from 103,000 tons in 1951.

Short supply, long demand may play havoc with soybean prices. Government prognosticators peered into their crystal ball, last week came up with a prediction of the coming year's soybean crop—264,395,000 bu.

This is some 15,000,000 bu. short of industry estimates, and while the USDA report did not immediately cause a run on the market, chances are that soybean—and oil—prices will move up.

WEEKLY BUSINESS INDICATORS	Latest Week	Preceding Week	Year Ago
CHEMICAL WEEK'S Output Index (1947=100)	$32,035,000	$8,414,000	$45,825,000
CHEMICAL WEEK'S Wholesale Price Index (1947=100)	121.5	120.5	119.8
Bituminous Coal Production (Daily Average, 1000 Tons)	1,600.0	1,392.0	1,695.0
Steel Ingot Production (Thousand Tons)	2,019.0	1,981.0	
Stock Price Index of 14 Chemical Companies (Standard & Poor's Corp.)	247.7	250.5	251.1
Chemical Process Industries Construction Awards (Eng. News-Record)	103.1	103.1	107.0

MONTHLY INDICATORS—WHOLESALE PRICES (1947-49=100)	Latest Month	Preceding Month	Year Ago
All Commodities (Other than Farm and Foods)	112.6	112.6	115.7
Chemicals and Allied Products	104.2	104.3	108.8
Industrial Chemicals	114.7	114.9	120.4
Drugs and Pharmaceuticals	92.1	92.2	95.6
Fertilizer Materials	110.7	109.9	107.1
Oils and Fats	49.8	52.0	70.0

On the other hand, the tung oil market is an example of stability. The U.S., of course, sees no China Wood oil because of the embargo, but the Argentine product remains at a steady 38½¢/pound (in the East), 39¼¢ in the Mid-west.

Domestic oil from the South will start coming in about early October. Farmers will hold out, probably get the Argentine prices. Although the domestic crop supplies only about 10-12,000 tons of the annual 80,000-ton requirement, it is cleaner, more refined than the imported—hence worth the price.

However, imports are taking the rap for depressed antimony oxide prices. One producer knocked 2¢ a pound off his oxide price-tags the middle of last week; by week's end most other suppliers had followed suit, are now offering the commodity for 30¢/pound cl., 31½¢ lcl.

Reason given for the cut: Ample domestic supplies, lessened demand. Reason for the reason: Lower-priced Belgian and British material hitting the U.S. market.

Those rumors (prevalent in the mid-west) of a weakening Eastern formaldehyde market are unfounded. Or so Eastern producers tell *CW*. Whispers have it formaldehyde mark-downs are an effort to lower resin prices; that the resin market has suddenly dropped off with some plants now operating at 50% capacity.

Facts are these: Eastern producers did lower formaldehyde prices slightly (less than ¼¢/pound) simply to match one firm's long standing level—4.2¢/pound, tanks, inhibited; 3.95¢, methanol-free. Some resin plants are not going full-tilt, but it's a normal, seasonal lull. One cause: Vacation periods for this industry come later than customary June-July shutdowns in other chemical process industries.

Cortisone is getting cheaper. Last week three major producers of the hormone were reducing wholesale prices 20-40%. Merck & Co. and Schering Corp. both attribute their 40% slash to increased production yields.

But Upjohn (Kalamazoo) marked-down its price only 20%; Explained that its cortisone had already been 20% cheaper than competing brands.

SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending August 23, 1952

UP

	Change	New Price		Change	New Price
Zinc, prime western	$ .005	$ .14			

DOWN

	Change	New Price		Change	New Price
Phosphorous oxychloride, drms., c.l., wrks.	.01	.13	Antimony oxide, c.l., frt. alld.	.02	.30

All prices per pound unless quantity is stated.

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LOCATION: 2,000 acres, for lease or for sale, single ownership, on banks of Red River—flood free—adjacent to and north of City of Denison, Texas. Site is approximately 4 miles below Denison Dam.

WATER: 50 million gallons per day minimum.

POWER: Denison is served by two heavy duty transmission lines.

GAS: 10-inch high pressure line extends through the property.

SEWERAGE: On the property.

TRANSPORTATION: Frisco Railway main line parallels the property, as do U. S. Highways 69 and 75.

LABOR: Excellent supply available from Denison—Sherman—Grayson County area. Population 70,000.

DETAILS REGARDING water flow, chemical analysis, temperature, taxes, etc., are available upon request.

Your reply will be kept confidential.

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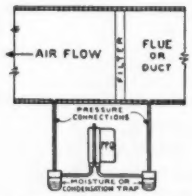
MERCOID DIAPHRAGM DIFFERENTIAL PRESSURE CONTROLS OPERATE FROM MINUTE CHANGES (.03"WATER) IN THE DIFFERENCE BETWEEN TWO PRESSURES.

RANGES TO COVER MOST APPLICATIONS (INCHES OF WATER) 6"VAC. TO 6" PRESS., AND 30"VAC. TO 30" PRESS. AVAILABLE FOR VARIOUS CIRCUIT ARRANGEMENTS.

CAN BE FURNISHED IN EXPLOSION PROOF OR WEATHER PROOF CASES.



Illustrated above is a standard application whereby the Type PPQ functions to open (or close) an electrical circuit from a variation in pressure differential due to a clogging filter.

WRITE FOR BULLETIN PPQ

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4205 BELMONT AVE., CHICAGO, ILL. · U. S. A.

SHELL-O-MATIC MACHINE CO.

AUTOMATIC SHELL MOLDS: A new chemical market in the making.

Foundry Molds a Market

Shell molding, a new foundry method for castings, may take 80 million pounds of phenolic resins a year by 1957.

The new process presages a mad scramble among resin makers shooting for top spot in the new market—with Reichhold Chemicals making ready to buck established powdered phenolics producers by a bristling sales campaign.

When a new process can be expected to expand a chemical market from a current 2-3 million pounds a year to an estimated 60-80 million pounds in less than five years, revamp a centuries-old industry, replace "brawny," skilled male labor with petite, unskilled female help, and interest an industrial entrepreneur like Henry H. Reichhold—that process is bound to warrant some long, hard looks from the rest of the chemical process industries. And the closest scrutiny is being made by the plastics industry.

Shell molding is the new technic that simplifies foundry mold and core making, produces lower-cost castings with greater accuracy, higher quality than possible by other means—and opens up a vast new outlet for phenolic resins.

A shell mold is simply a thin mold of sand into which the molten metal is poured to produce castings with smoother, more accurate dimensions—therefore requiring less machining—than conventional molds. The old type's two halves are made by packing a lot of sand tightly around a wood or metal pattern.

Resin and Sand: What makes the new process possible is the 3½-6% phenolic resin that binds the small amount of sand together. These thin shells (less than ¼ inch thick) require only about 5% as much sand as solid cores and molds used in traditionally foundry practice.

With much of the sand and sand-handling equipment eliminated, there will be some changes in basic character of the foundry. For one, foundries will no longer need as much space as many now require. Workers' lifting weights, too, will be sharply curtailed, for the new molds are light enough

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In the chemical industry where lights, essential to the safety of working men, burn 24 hours a day; along the runways of airports; in railway yards and control towers; along the docks and in beacon lights off-shore; Silastic-covered lead wire can assure continuous, trouble-free operation, and pay for itself in reduced maintenance and replacement costs alone. ¶ In the huge Midland plant of The Dow Chemical Company, for example, all lighting circuits are carried in conduit that doubles as supports and hangers for more than 50,000 lighting fixtures. Many of these are vapor-proof or explosion-proof fixtures where heat is a more serious problem. Over half of these fixtures burn constantly. Most of them are exposed to outdoor weathering. ¶ Under those conditions, maintenance and replacement were such a costly problem that engineers in the Electrical Department tried, and now specify, lead wire insulated with Silastic. This Dow Corning silicone rubber is the only kind of rubbery insulating material that retains good dielectric properties and will not crack or become brittle after long and continuous exposure to outdoor weathering at temperatures from —70° to +350° F. ¶ Silastic is also used as a gasketing and sealing material in hundreds of aircraft and automotive applications, at temperatures ranging from —100° to more than +500° F. It is unique among electrical insulating materials for Class B and Class H lead wire, for ignition and Navy control cable, and for transformers and field coils in traction motors.

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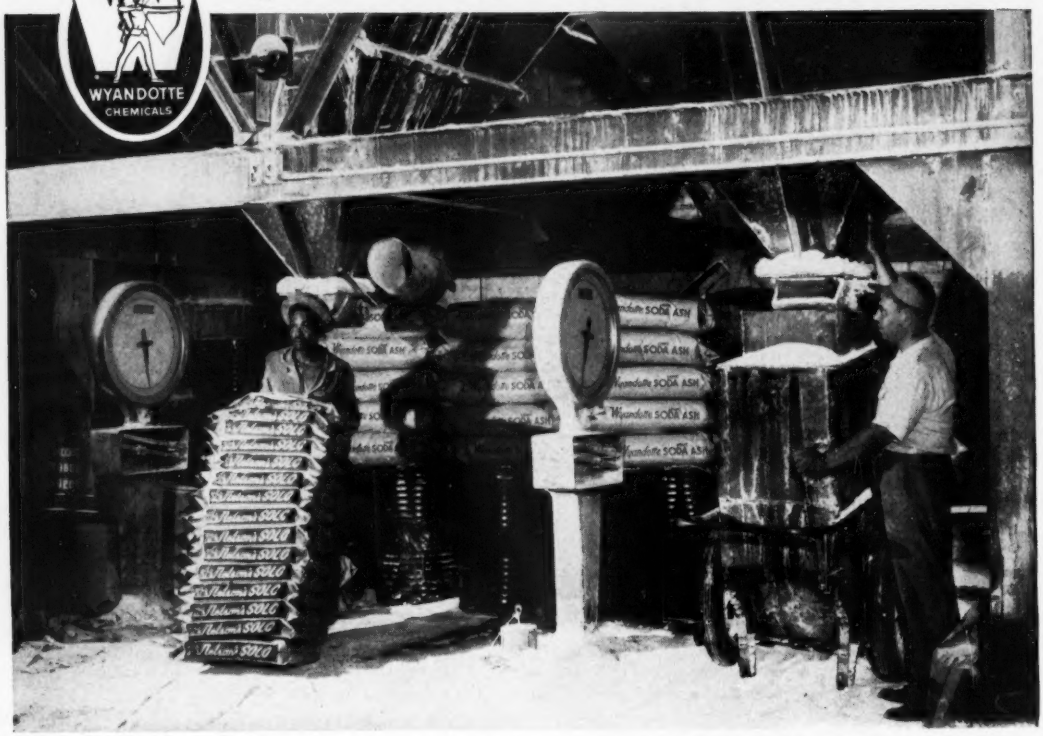

Nelson Chemicals' plant superintendent, Jack Schey (right), loads bin cart from huge soda ash hopper. Bags in background are for Nelson's customer needs.

Wyandotte Technical Service saves Nelson Chemicals $25,000 a year!

Handling cost of Wyandotte Soda Ash is reduced 90%!

Nelson Chemicals Company, Detroit, was buying Wyandotte Soda Ash in 100-lb. bags.

"Then," relates Mr. Harold R. Nelson, Nelson Chemicals Company, "Wyandotte Technical Service engineered equipment which enabled us to unload soda ash from a car into two 100-ton capacity hoppers in our plant. This installation saves us the difference between bag and bulk purchases and cuts handling costs 90%. It paid for itself within two years, and we enjoy a yearly savings of approximately $25,000! We've been a Wyandotte customer for 21 years for soda ash, caustic soda and liquid chlorine. Wyandotte has always been a helpful and reliable source of supply."

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for women to handle. Shell molds can be conveyed to the metal pouring areas instead of the cumbersome method of transporting molten metal to the molds.

But there will be some changes in the chemical industry too as powdered phenolic manufacturers help to develop, strive to keep up with, this booming market for their products.

The shell molding process requires dry thermosetting resins and this may be one factor in the plans of Reichhold Chemicals, boasting a $10 million a year liquid phenolic business, to buck the solid and powdered phenolics field now dominated by Bakelite, Monsanto, Borden, General Electric, Durez and a few others.

Here Comes RCI: Henry Reichhold, owner and board chairman of RCI, often called a maverick in the chemical process industries, is expected to employ his usually successful aggressive marketing methods to bite into the other fellows' pie. Some sharp new teeth RCI promises to flash: expansion of its Tuscaloosa (Ala.) plant that will boost production of the basic material, phenol, to a whopping 60 million pounds a year; installation of new, practically tank-car capacity (10,000 gallons) stainless steel kettles at its Detroit and Elizabeth (N.J.) plants, as well as at Tuscaloosa, to turn out phenolic resins.

There is no doubt the one-man firm, now a big factor in bonding, laminating plastics (rates itself the world's largest manufacturer of synthetic resins), also is trying hard for a top spot as a phenol producer. (Number one at the moment, is Dow Chemical, with Monsanto a close second.)

But Monsanto intends to assure its high standing in phenol production. A new plant (Avon, Calif.), now a-building, is expected to be in operation by early 1954. It will be that company's largest West Coast unit.

Monsanto, of course, is one of the recognized pioneers in the resins-for-shell molds field. The first resin that Ford Motor used in large volume for its shell molding program came from Monsanto. That was back in 1947. Today, the Ford account alone puts Monsanto at the top of the list of manufacturers who last year turned out some 74 million pounds (dry weight) of phenolic resins that went into brake linings, grinding wheels, wood waste products, foundry shell molds and cores.

The latter is the baby with the largest growth expectancy as a phenolic resins consumer—the one Henry Reichhold has his sights on.

Sighting High: Sand-bonding operations at the present time consumes a piddling amount of the resins now produced: some estimates say 2-3 million pounds a year. (Monsanto, however, claims it is selling more than that right now.) Whether the figure is 2-3 million or closer to 6 million it is still insignificant when compared to the towering 60-80 million pounds experts estimate will be consumed in the near future.

Bakelite recently asserted that the higher figure (80 million) more nearly pegs resins consumption in 1957—a scant five years from now—assuming that only 5% of all castings are then shell-molded. Borden, another pioneer, concurs with Bakelite.

Reichhold is even more optimistic, says that within five years more than 25% of the nation's 6,000 foundries will be using shell molds.

Borden's Chemical Division staked its claim in the foundry field early, was the first (in 1939) to bond core sands with synthetic resins. (By last week Borden was claiming another first: development of a powdered phenolic core bonding resin suited to curing in dielectric ovens.)

Upsurge of Interest: In recent months there has been an impressive upsurge of foundry-men's interest in shell molding. And most resins producers are ready, able, and more than willing to nurture that interest. Typical is Borden's staff of "foundry engineers"—composed of practical foundrymen with years of experience—who provide on-the-spot-guidance in any foundry in the use of resin binders for conventional core practice or for the new shell mold process. The reward, of course, for such expended money, time and effort, is a greatly expanded market.

The growth of shell molding depends primarily on the success of automatic machinery to turn out the molds. These new machines have reduced the once-tough mold-making process to practically a push-button operation in which female operators can produce better than a mold per pattern per minute.

But now that RCI has declared itself in, many competitors fear much of the bigger market may fall to that company's close-pricing efforts. For often in the past, they recount, Reichhold's marketing methods have gobbled up outlets they thought they had.

No matter who gains top spot, the husky, multi-muscled foundryman is going the way of the equally brawny village smithy. The chemical process industries, in shell molding, have swallowed another "growth factor." And there's going to be a madder-than-ever scramble for a burgeoning powdered phenolic resins market.

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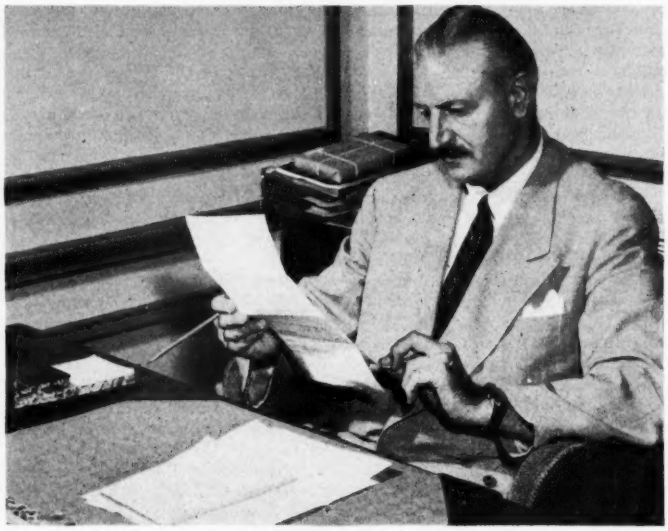

ICI's MacLEAN: A tariff wall is hard to hurdle.

"Trade, Not Aid" Not Easy

In an office high above Manhattan's stylish Fifth Avenue, a tweedy gentleman with a slight British accent is looking out over the American distribution scene. What he sees is an attractive market for his company's products but he is not too optimistic about making a large dent in it. His name: Hugh MacLean. His job: sales development for Imperial Chemical Industries in the U.S.

Last week, believing that the final judgment ending another round of the DuPont-ICI antitrust suit (*CW, August 9*) contains an implied indictment that Du Pont and ICI indeed had followed a mutual policy of "you stay out of my backyard and I'll stay out of yours," CW talked to MacLean's London superiors concerning ICI's position in the U. S. markets. While they held that it would be improper to discuss the suit itself at this time, there was no mistaking their belief that it was the American tariff wall—and that alone—which accounted for ICI's comparatively low volume of sales in this country.

High Hurdle: Imperial Chemical Industries, the chemical giant of the British empire, is England's largest single industrial exporter. During 1951 it sold over $160 millions' worth of chemical products in overseas markets—yet less than $5 million of this found its way into the United States. At the same time, the American chemical industry sold nearly $50 millions' worth to customers in Britain. This was up 50% from the year before.

The British need dollars—and need them badly—but the only effective way they can get them is to sell products to American or other "hard currency" customers. The other alternative is more Washington handouts—an unhealthy method for both British stability and the U. S. taxpayer. In fact, the English government is now pushing the slogan "Trade—Not Aid" as the summation of its long-term commercial ambitions. ICI claims that it is doing its best to carry its share of this effort, but the odds are against it.

"Except for new or novel products," says ICI London, "we are only able to come in on a marginal basis." Specifically, ICI points its finger at these factors:

- Exceedingly high tariffs on a number of products—especially dyestuffs, specialties, and plastics, for which ICI has the potential to develop markets in the U. S.
- Lack of a logical classification system, particularly for plastics and synthetic fibers, whereby an importer, by simple reference, can determine accurately beforehand just what duty he will have to pay.
- The application of "American Selling Price" as the base for figuring duty on coal-tar products.

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ICI claims it can prove its point on almost any of the 12,000 products which it manufactures. Using a hypothetical coal-tar product with an American selling price of 17¢ per pound, for instance, ICI demonstrates that it would have to pay a 25% ad valorem duty plus a flat 3.5¢ per pound. This would net it less than 10¢, landed in the U. S., after paying ocean freight, if the company were to compete with the domestic product. "Clearly ridiculous!" say the ICI officials sitting in their London headquarters, situated almost in the shadows of the British House of Parliament where the "Trade—Not Aid" talk sounds the loudest.

Another case is that of dyestuffs, which make up a substantial part of ICI's present American sales effort. If the company develops a dye with no U. S. counterpart, it is allowed to bring it into this country for the comparably "small" duty of 40% ad valorem. But if it competes with an American product, the domestic selling price device applies—shooting the effective duty up over 100%.

In a similar vein, the British firm takes to task the classification system used by the U. S. customs in determining the duty on plastics and synthetic fibers. At the time the Tariff Act of 1930 was formulated, most of these modern products were unknown; consequently there are few, if any, definite, predictable categories into which they can fit.

In the fiber field, for example, there are two general classifications which a customs officer can use. One is the generally low-rated group of "rayon or other synthetic fibers" (duty: 15% ad valorem). But equally apt is the category which is meant to include materials which are "similar" to silk, wool, or other natural fibers. Nine types of synthetics, including all forms of nylon, are in this classification with a duty of 6¼% to 30% plus flat rates of up to 37½¢ a pound. When an importer tries to bring in blended yarns or fabrics, the confusion becomes compounded.

In this connection, ICI has finally obtained a revised Customs Ruling on its new synthetic, Ardil—a fiber made

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PACKAGING OF CHEMICALS was in mind when West German Hans Andreae set out to develop a rubber-lined jute bag. He thinks he has the answer here and is back in business as a bag manufacturer after losing his jute weaving factory in an Allied air raid during World War II. The trick is to impregnate ordinary jute fabric with a synthetic rubber material that is pliable and crack-proof. His current production of 100-pound sacks is finding a satisfactory outlet in the burgeoning domestic German chemical market—although the price is at least three or four times that of unlined jute bags. The differential can often be justified by the re-usability of the sacks and their imperviousness to most industrial chemical products.

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from peanuts. It takes the lower "rayon or other synthetic fibers" rate of 15%.

Liaison Man: Hugh MacLean, a director of ICI (New York) Ltd., an American corporation, watches over the U. S. distribution scene for ICI in London. Actually, he does no direct selling to the American trade; that is done through the parent company's U. S. distributors. MacLean's task is to develop such outlets and lay the groundwork for additional sales coverage.

The present selling effort is handled by a quartet of American firms, one of which is the subsidiary, Arnold, Hoffman & Co. (Providence, R. I.). This manufacturer of dyestuffs acts as the U. S. selling agent for ICI's imported colors. Its purchase in 1950 is said to again reflect the parent firm's tariff troubles. Since ICI could not directly exploit the products of its multimillion-pound research program in the American market, it was decided that the best alternative would be to use a company like Arnold, Hoffman as a behind-the-tariff-wall manufacturing arm. This would utilize and implement British inventiveness much more effectively than would the earlier policy of licensing American firms under ICI patents.

Arnold, Hoffman also sells products of the Plastics Division of its English parent. The other three established distributors are Chemical Manufacturing Co. (New York), which handles alkalis and heavy chemicals; C. Tennant Sons & Co., also of New York, which is the representative on nonferrous metal products; and American Home Products Corp., which handles IC's pharmaceutical specialties.

MacLean will recommend the setting up of other outlets, or the expansion of these, as he finds likely markets where his company can compete. But, says he, unless there are some drastic changes in the tariff wall which surrounds the American chemical process industries, the chances are that this will be a long and difficult process.

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When a major supplier tries a new method of transporting his product, no special industry trend is indicated. But when a major customer (of a different supplier) adopts the idea—there can be little doubt that the new technique has indeed "arrived." In this category fits the news that Consolidated Chemical is planning to follow Freeport Sulphur's lead in using tank barges for the transportation of molten sulfur.

Consolidated will use a special $160,000 barge which has just been launched by Bethlehem Steel at a Beaumont, Texas, shipyard. The vessel was built for Coyle Lines, Inc., a long-time carrier of dry bulk sulfur. If all goes well, within a few weeks Coyle will be delivering 1,000 tons of molten brimstone every other day to Consolidated's Houston acid plant.

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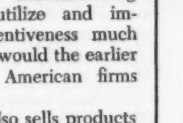

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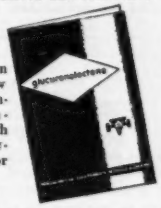

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Mills, Raymond #5047 & 5057, High Side Roller, (2). Consolidated Products, 18 Park Row, N.Y. 38.

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CHEMICAL WEEK

330 W. 42nd St., N.Y. 36, N.Y.

is in a molten state. Since the great bulk of it is used in the manufacture of sulfuric acid—where the sulfur is again melted before being pumped to the burners—it is only logical that efforts should be made to save the heat content.

The first experiments were on a smaller scale. Since the end of the war, several acid makers have successfully tried using insulated tank-car movements. Such companies as Carbide and Carbon, General Chemical, and Mathieson now include this method in their sulfur-transporting programs. Cases are on record where no "freezing" difficulties have been encountered despite tank-car trips taking as long as three weeks. Part of the secret for this remarkable performance lies in the insulating properties of the sulfur itself. The freezing naturally starts along the tank skin, and this scale adds steadily to the total insulation available.

By Water: The next step was to try the idea on barge-size loads. In this, Freeport Sulphur took an early lead. Three years ago it built a 150-foot vessel equipped with an insulated 120-foot tank. The barge has been used for carrying sulfur between the Freeport mine at Grande Ecaille, La., and the storage-shipping area at Port Sulphur, ten miles away.

The timing on this experiment was fortunate—for Freeport Sulphur's newest deposits are even farther out in the Mississippi River swamplands. Based on the success of the first vessel, the sulfur company has ordered several more—even larger. These will bring molten brimstone in from Garden Island Bay (40 miles away) and Bay St. Elaine, involving at least a 75-mile trip.

Texas Gulf, the other of sulfur's Big Two, does not have any immediate plans for following suit—the technique does not fit into its present geographical situation. Texas Gulf was, however, quite willing to cooperate with its customer, Consolidated Chemical, when the latter decided to give the method a try. At its Moss Bluff terminal, Texas Gulf has installed a special insulated storage tank capable of holding up to 1,500 tons of sulfur. Simple connections allow it be filled with molten brimstone coming directly from the mines, and another line is being installed to accommodate the loading of Consolidated's barge.

The tank on the latter is a 167-foot mammoth. With the aid of fiber glass insulation, it is hoped that a temperature of 300° F. can be maintained within the tank during its 60-mile trip to Houston. But in spite of its size, the barge will have to maintain close to a two-days-per-round-trip schedule in order to keep up with Consolidated's sulfur needs.

The acid maker itself has invested heavily in the new project. Nearly $250,000 has been spent on storage tanks and special piping at the Houston plant. Obviously, the savings to be realized by a change to molten deliveries were paramount in the decision to spend this money—offering proof that sulfur in a melted state is well on its way toward becoming an established article of commerce.

Use With Caution

Chloromycetin, Parke-Davis' antibiotic wonder drug, has been given a provisional clearance by the Food and Drug Administration. The FDA has decided to allow its continued sale—provided that the manufacturer explicitly warn physicians against its indiscriminate use.

The drug has been administered, since its introduction in 1949, to an estimated 8 million patients. But in the first half of this year, reports that it was causing an inordinate number of blood disorders led the FDA to make a nation-wide survey of hospital and clinic records.

The present limited approval comes as result of the agency's findings in this investigation. It was decided that Chloromycetin's value outweighed its capabilities for causing harm—if it is carefully used and only when absolutely needed.

Parke, Davis & Co., as producer of the drug, is directly affected by the FDA action. The firm's sales personnel, in talks with CW, have indicated that it is "too soon to be able to say" what effects the recent blood-disorder publicity and the new FDA policy will have on its handling of the drug.

As could be expected, no comments were forthcoming on the influence these have had on Chloromycetin's sales pattern. "We have been working very closely with FDA on this problem all along," it was stated, "and we consider that the action [involving a new warning to be put on all labels] is entirely fair and reasonable."

In a prepared statement, Parke, Davis president Harry Loynd summed up his company's position. "Throughout the recent evaluations . . . we were gratified to receive many expressions of confidence from physicians who used Chloromycetin successfully. We are glad that physicians will continue to use the drug according to their own best judgment."

BOOKLETS . . . . . .

Chemicals

Concrete Additive

4-p. brochure describes air entraining agent allowing excess air with no loss in compressive strength. Uses, advantages, and testing charts are included. Veriset Corp., 150 Nassau St., New York 38, N.Y.

Silicone Rubber

16-p. review of the properties and performance of Dow Corning silicone rubber, entitled "Silastic Facts No. 10a." Dielectrics, gaskets, seals, mechanical parts, and other applications are described and illustrated. A chart summarizes physical characteristics of 22 leading stocks. Dow Corning Corp., Midland, Mich.

Resin Adhesives

6-p. magazine reprint discusses the development, preparation, and advantages of resin emulsion adhesives. Methods of applying resin adhesives and suggestions for obtaining proper results are also described. Technical bulletins and laboratory reports are also available. Paisley Products, Inc., 1770 Canalport Ave., Chicago 16, Ill.

Hydrogen Peroxide

1-p. bulletin describes new grade of hydrogen peroxide, 35%, Formula F, specially developed for food processors. Specifications and properties are included. Bulletin No. 41, Buffalo Electro-Chemical Co., Inc., Station B, Buffalo 7, N.Y.

Equipment

Wiring Devices

8-p. folder on operation and advantages of interlocking wiring devices. Recent improvements, typical applications in industrial plants, and installations are shown. Units available in 20 amperes, 250 volts, 10 amperes, 575 volts, and 2-, 3-, and 4-wire models. Arrow-Hart & Hegeman Electric Co., 103 Hawthorn St., Hartford 6, Conn.

Shelf Storage

16-p. catalog entitled "The Science of Economical Shelf Storage" discusses benefits of Rotabin rotary shelving to store tools and materials efficiently in manufacturing plants. Advantages, design, and construction features are described and illustrated. Frick-Gallagher Manufacturing Co., Wellston, O.

Switches

24-p. catalog of precision snap-action switches covers safety, limit, and interlock switches designed especially for switching a-c circuits in industrial and commercial applications. Complete information on each switch, technical data, and application ideas are indicated. Catalog No. 82, Micro Division, Minneapolis-Honeywell Regulator Co.

Oxygen Production

24-p. booklet entitled "The Linde-Fraenkl Process—Low-Cost Tonnage Oxygen Production" describes oxygen and other low temperature separation processes now offered to industrial users in the U.S. Included in the booklet: a discussion of investment, power, and operating costs; and a special section covering thermodynamic data on air, oxygen, and nitrogen. Request on company letterhead, Blaw-Knox Co., Chemical Plants Division, P.O. Box 778, Pittsburgh 30, Pa.

Container Mover

2-p. bulletin describes vertical container mover which handles full drums. Advantages, construction features, and charts on capacity are included. Dispersion Specialties, 297 Lincoln Ave., Orange, N.J.

CHEMICAL WEEK • ADVERTISER'S INDEX • AUGUST 23, 1952

AMERICAN FLANGE & MANUFACTURING CO., INC. 61
Agency—Freiwald & Coleman, Advertising

BERKSHIRE CHEMICALS, INC. 63
Agency—J. Hayden Twiss, Advertising

BROWN CO. 60
Agency—J. M. Mathes, Inc.

BUFFALO FORGE CO. 25
Agency—Melvin F. Hall, Advertising Agency

CARBIDE & CARBON CHEMICAL CO. A DIVISION OF UNION CARBIDE & CARBON CORP. ..... back cover
Agency—J. M. Mathes, Inc.

CELANESE CORP. OF AMERICA 3
Agency—Ellington & Co., Inc.

COLUMBIA-SOUTHERN CHEMICAL CORP. 23
Agency—Ketchum, MacLeod & Grove, Inc.

COMMERCIAL PETROLEUM & TRANSPORT CO. 26
Agency—Laughlin, Wilson, Baxter & Persons, Advertising

CONTINENTAL CAN CO. 51
Agency—Batten, Barton, Durstine & Osborn, Inc.

CORN PRODUCTS REFINING CO. 65
Agency—J. Hayden Twiss, Advertising

DOW CORNING CORP. 57
Agency—Don Wagnitz, Advertising

DU PONT de NEMOURS & CO., INC., E. I. 27
Agency—Batten, Barton, Durstine & Osborn, Inc.

EIMCO CORP., THE 1
Agency—Matsie Co.

ENJAY CO., INC. 29
Agency—McCann-Erickson, Inc.

GENERAL ELECTRIC CO. 31
Agency—Benton & Bowles, Inc.

GENERAL ELECTRIC CO. 64
Agency—Benton & Bowles, Inc.

GIRDLER CORP., THE 40
Agency—The Griswold-Eshleman Co.

GOODRICH CHEMICAL CO., B. F. 30
Agency—The Griswold-Eshleman Co.

GOODYEAR CHEMICAL DIVISION 8
Agency—Kudner Agency

HARDESTY CO., INC. 2
Agency—J. Hayden Twiss, Advertising

HARDINGE CO., INC. 26
Agency—The W. H. Long Co.

HINDE & DAUCH 38
Agency—Howard Swink, Advertising Agency

HOOKER ELECTROCHEMICAL CO. 43
Agency—Charles L. Rumrill & Co.

INNIS, SPEIDEN & CO., INC. 52
Agency—J. Hayden Twiss, Advertising

JOY MANUFACTURING CO. 34
Agency—Walker & Downing, General Agency

KOPPERS CO., INC., TAR PRODUCTS DIVISION 36
Agency—Batten, Barton, Durstine & Osborn, Inc.

KRAFT BAG CORP. 62
Agency—Arthur A. Judson, Inc.

MC LAUGHLIN, GORMLEY KING CO. 56
Agency—Alfred Colle Co.

MENTE & CO., INC. 4
MERCOID CORP. 56
METAL HYDRIDES, INC. 28
Agency—Tippett, Jackson & Nolan, Inc.

NATIONAL CARBON CO. 24
Agency—Wm. Esty Co., Inc.

NEVILLE CO., THE 5
Agency—Advertising Agency of Wm. Cohen

NIAGARA ALKALI CO. 49
Agency—Hazard Advertising Co.

O-CEDAR OF CANADA 50
Agency—MacLaren Advertising Co.

ORONITE CHEMICAL CO. 39
Agency—L. C. Cole Co.

PAISLEY PRODUCTS, INC. 50
Agency—The Vanden Co., Inc.

PETROLITE CORP. 19
Agency—John C. Fellows Co.

PFAUDLER CO., THE 32
Agency—Charles L. Rumrill & Co., Inc.

REICHHOLD CHEMICALS, INC. ..... 3rd cover
Agency—MacManus, John & Adams, Inc.

SEVENTH NATIONAL CHEMICAL EXPOSITION 59
SHELL CHEMICAL CORP. 20
Agency—J. Walter Thompson Co.

SLY MANUFACTURING CO., W. W. 44
Agency—The Bayless-Kerr Co.

SPARKLER MANUFACTURING CO. 22
Agency—Kricker & Meloan, Inc.

ST. LOUIS SAN FRANCISCO RAILWAY CO. 55
Agency—Warner & Associates

STOKES MACHINE CO., F. J. 48
Agency—John Mather Lupton Co., Inc.

TENNESSEE EASTMAN CO. 45
Agency—Kenyon & Eckhardt, Inc.

ULTRA CHEMICAL WORKS, INC. 6-7
Agency—S. L. Leon Co., Inc.

UNION CARBIDE & CARBON CORP., CARBIDE & CARBON CHEMICAL CO... back cover
Agency.—J. M. Mathes, Inc.

U. S. INDUSTRIAL CHEMICALS, INC. ..17-18
Agency—G. M. Basford Co.

VICTOR CHEMICAL WORKS 37
Agency—Cruttenden & Eger, Advertising

WESTVACO CHEMICAL DIVISION, FOOD MACHINERY & CHEMICAL CORP. 2nd cover
Agency—James J. McMahon, Inc.

WILLSON PRODUCTS, INC. 21
Agency—Beaumont, Heller & Sperling, Inc.

WYANDOTTE CHEMICALS CORP. 58
Agency—Brooke, Smith, French & Dorrance, Inc.

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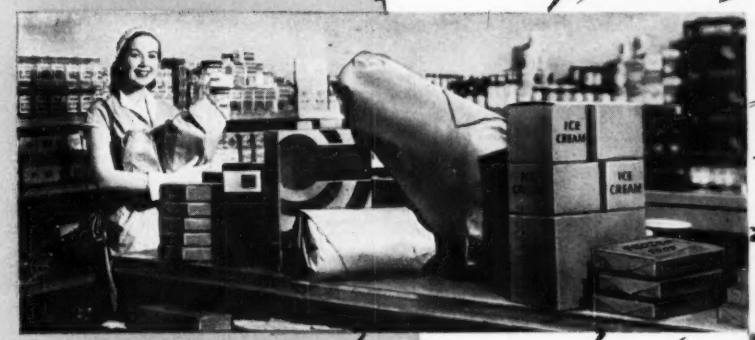

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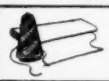
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